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<110> Monsanto Technology LLC
     Donovan, Judith C
      Donovan, William P
     Engleman, James T
      Malvar, Thomas M
      Pitkin, John W
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TIC900.ST25.txt

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## TIC900.ST25.txt

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Page 3

## TIC900.ST25.txt

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TIC900.ST25.txt

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Thr Val Ser Phe Ser Thr Pro Phe Ser Phe Ser Asn Ala Gln Ser Ile

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570

1728

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Thr Ala Leu Gln Phe Val Phe Asn Gln Leu Trp Ser Arg Leu Gly Asp 50 60

Ser Gly Trp Asn Ala Phe Met Glu His Val Glu Glu Leu Ile Asp Thr 65 70 75 80

Lys Ile Glu Gly Tyr Ala Lys Asn Lys Ala Leu Ser Glu Leu Ala Gly 85 90 95

Ile Gln Arg Asn Leu Glu Thr Tyr Ile Gln Leu Arg Asn Glu Trp Glu 100 105 110

Asn Asp Ile Glu Asn Ser Lys Ala Gln Gly Lys Val Ala Asn Tyr Tyr 115 120 125

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TIC900.ST25.txt

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Ala Gln Leu Thr Arg Glu Val Tyr Thr Asp Pro Leu Leu Asn Phe Asn 260 265 270

Pro Lys Leu His Ser Val Ser Gln Leu Pro Ser Phe Ser Asp Met Glu 275 280 285

Asn Ala Thr Ile Arg Thr Pro His Leu Met Glu Phe Leu Arg Met Leu 290 295 300

Thr Ile Tyr Thr Asp Trp Tyr Ser Val Gly Arg Asn Tyr Tyr Trp Gly 305 310 315

Gly His Arg Val Thr Ser Tyr His Val Gly Glu Asn Ile Arg Ser 325 330 335

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TIC900.ST25.txt
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Ser Glu Arg Tyr Arg Val Arg Ile Arg Tyr Ala Ser Thr Thr Asp Leu 515 520 525

Gln Phe Val Thr Ser Ile Asn Gly Ala Thr Ile Asn Ile Gly Asn Phe 530 535 540

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cct Pro	cta Leu	tat Tyr	ggt Gly 340	aga Arg	gag Glu	gca Ala	aat Asn	caa Gln 345	gag Glu	gtt Val	cct Pro	aga Arg	gat Asp 350	ttt Phe	tat Tyr	1056
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1803

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#### TIC900.ST25.txt

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Ala Gln Leu Thr Arg Glu Val Tyr Thr Asp Pro Leu Leu Asn Phe Asn 260 270

Pro Lys Leu His Ser Val Ser Gln Leu Pro Ser Phe Ser Asp Met Glu 275 280 285

Asn Ala Thr Ile Arg Thr Pro His Leu Met Glu Phe Leu Arg Met Leu 290 295 300

Thr Ile Tyr Thr Asp Trp Tyr Ser Val Gly Arg Asn Tyr Tyr Trp Gly 305 310 315

Gly His Arg Val Thr Ser Tyr His Val Gly Glu Asn Ile Arg Ser 325 330 335

Pro Leu Tyr Gly Arg Glu Ala Asn Gln Glu Val Pro Arg Asp Phe Tyr 340 345 350

Phe Tyr Gly Pro Val Phe Lys Thr Leu Ser Lys Pro Thr Leu Arg Pro 355 360 365

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gct Ala	tta Leu	ttc Phe	ccg Pro	cac His 245	tat Tyr	gat Asp	gta Val	caa Gln	act Thr 250	tat Tyr	cca Pro	ata Ile	aca Thr	acc Thr 255	gtt Val	768
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cct Pro	aaa Lys	tta Leu 275	cat His	cct Pro	gtg Val	tct Ser	caa Gln 280	tta Leu	cct Pro	agt Ser	ttt Phe	agt Ser 285	gac Asp	atg Met	gaa Glu	864
										gaa Glu						912
aca Thr 305	att Ile	tat Tyr	aca Thr	gat Asp	tgg Trp 310	tat Tyr	agt Ser	gtg Val	gga Gly	aga Arg 315	aac Asn	tat Tyr	tat Tyr	tgg Trp	gga Gly 320	960
gga	cat	cgc	gtg	acg	tct	tac	cat	gta	gga	gga		aat	ata	aga	tca	1008

Page 13

				em).	0	<b></b>	77 £ ~					5.tx		Dra.	Ser	
Gly		_		325					330				•	335		
cct Pro	cta Leu	tat Tyr	ggt Gly 340	aga Arg	gag Glu	gca Ala	aat Asn	caa Gln 345	gag Glu	gtt Val	cct Pro	aga Arg	gat Asp 350	ttt Phe	tat Tyr	1056
ttt Phe	tat Tyr	gga Gly 355	ccc Pro	gtt Val	ttt Phe	aag Lys	acg Thr 360	tta Leu	tca Ser	aag Lys	ccg Pro	act Thr 365	cta Leu	aga Arg	cca Pro	1104
tta Leu	cag Gln 370	cag Gln	cct Pro	gca Ala	cca Pro	gct Ala 375	cct Pro	cct Pro	ttt Phe	aat Asn	tta Leu 380	cgt Arg	agc Ser	tta Leu	gag Glu	1152
gga Gly 385	gta Val	gaa Glu	ttc Phe	cac His	act Thr 390	cct Pro	aca Thr	ggt Gly	agt Ser	ttt Phe 395	atg Met	tat Tyr	cgt Arg	gaa Glu	aga Arg 400	1200
gga Gly	tcg Ser	gta Val	gat Asp	tct Ser 405	ttt Phe	aat Asn	gag Glu	tta Leu	ccg Pro 410	cct Pro	ttt Phe	aat Asn	cca Pro	gtt Val 415	GJA āāā	1248
tta Leu	cct Pro	cat His	aag Lys 420	Val	tac Tyr	agt Ser	cac His	cgt Arg 425	tta Leu	tgt Cys	cat His	gca Ala	acg Thr 430	ttt Phe	gtt Val	1296
cgt Arg	aaa Lys	tct Ser 435	Gly	acc Thr	cct Pro	tat Tyr	tta Leu 440	aca Thr	aca Thr	ggt Gly	gcc Ala	atc Ile 445	ttt Phe	tct Ser	tgg Trp	1344
aca Thr	cat His 450	Arg	agt Ser	gct Ala	gaa Glu	gaa Glu 455	Thr	aat Asn	aca Thr	att Ile	gaa Glu 460	Ser	aat Asn	att Ile	att Ile	1392
acg Thr 465	Gln	atc Ile	ccg Pro	tta Leu	gta Val 470	Lys	gca Ala	tat Tyr	caa Gln	att Ile 475	GTA	tca Ser	ggc	act Thr	act Thr 480	1440
gta Val	agg Arg	aaa Lys	gga Gly	cca Pro	Gly	ttc Phe	aca Thr	gga Gly	ggg Gly 490	Asp	ata Ile	ctt Leu	cga Arg	aga Arg 495	aca Thr	1488
ggt Gly	cct Pro	gga Gly	aca Thr	Phe	gga Gly	gat Asp	ato Met	aga Arg	, Ile	aat Asn	att	aat Asn	gca Ala 510	PEC	tta Leu	1536
tct Ser	caa Glr	aga Arg 515	ј Туз	cgt Arg	gta y Val	agg Arg	g att g Ile 520	Arg	tat Tyr	gct Ala	tct Ser	acg Thr 525	THI	gat Asp	tta Leu	1584
caa Glr	ttt Phe 530	· Val	c acq L Thi	g agt c Sei	att	aat Asr 535	ı Gly	g aco	c acc	att	aat Asr 540	J TTE	ggt Gly	aac Asr	ttc Phe	1632
cca Pro	Ly:	a act	t ati	t aat e Ası	aat n Asr 550	ı Leı	a aat 1 Asi	aci	t tta r Le	ggt 1 Gly 55!	y Sei	gaç Gl	g ggd 1 Gly	tat y Ty	aga Arg 560	1680
aca Thi	a gta	a tog L Se:	g tti r Pho	t agt e Se: 56!	r Thi	c cca r Pro	a tti	t ag	t tto r Pho 570	e Se:	a aat r Ası	t gca n Ala	a caa a Gli	a age n Sei 57	c ata r Ile 5	1728
tti Phe	aga Arg	a tta g Le	a gg u Gl; 58	y Il	a caa e Gli	a gca n Ala	a tt a Ph	t tc e Se 58	r GI	a gti y Va	t caa 1 Gli	a gaa n Gli	a gt u Vai 59	т т.	t gtg r Val	1776
gat As <sub>l</sub>	t aaa o Ly:	a at	t ga e Gl	a tt u Ph	t at e Il	t cci e Pro	t gt o Va	t ga 1 Gl	a u		•					1803

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TIC900.ST25.txt

<210> 8

595

<211> 601

<212> PRT

<213> Bacillus thuringiensis

<400> 8

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Ile Gly Met Ser Ile Val Ser Glu Leu Ile Gly Met Ile Pro Gly Gly
35 40 45

Thr Ala Leu Gln Phe Val Phe Asn Gln Leu Trp Ser Arg Leu Gly Asp 50 55 60

Ser Gly Trp Asn Ala Phe Met Glu His Val Glu Glu Leu Ile Asp Thr 65 70 75 80

Lys Ile Glu Gly Tyr Ala Lys Asn Lys Ala Leu Ser Glu Leu Ala Gly 85 90 95

Ile Gln Arg Asn Leu Glu Thr Tyr Ile Gln Leu Arg Asn Glu Trp Glu 100 105 110

Asn Asp Ile Glu Asn Ser Lys Ala Gln Gly Lys Val Ala Asn Tyr Tyr 115 120 125

Glu Ser Leu Glu Gln Ala Val Glu Arg Ser Met Pro Gln Phe Ala Val 130 135 140

Gly Asn Phe Glu Val Pro Leu Leu Thr Val Tyr Val Gln Ala Ala Asn 145 150 155 160

Leu His Leu Leu Leu Arg Asp Val Ser Val Tyr Gly Lys Arg Trp
165 170 175

Gly Trp Ser Glu Gln Lys Ile Lys Ile Tyr Tyr Asp Lys Gln Ile Lys 180 185

Tyr Thr His Glu Tyr Thr Asn His Cys Val Asn Trp Tyr Asn Lys Gly
195 200 205

Leu Glu Arg Leu Lys Asn Lys Gly Ser Ser Tyr Gln Asp Trp Tyr Asn 210 215 220

#### TIC900.ST25.txt

Tyr Asn Arg Phe Arg Arg Glu Met Thr Leu Thr Val Leu Asp Ile Val Ala Leu Phe Pro His Tyr Asp Val Gln Thr Tyr Pro Ile Thr Thr Val Ala Gln Leu Thr Arg Glu Val Tyr Thr Asp Pro Leu Leu Asn Phe Asn 265 Pro Lys Leu His Pro Val Ser Gln Leu Pro Ser Phe Ser Asp Met Glu 280 Asn Ala Thr Ile Arg Thr Pro His Leu Met Glu Phe Leu Arg Met Leu Thr Ile Tyr Thr Asp Trp Tyr Ser Val Gly Arg Asn Tyr Tyr Trp Gly Gly His Arg Val Thr Ser Tyr His Val Gly Glu Asn Ile Arg Ser Pro Leu Tyr Gly Arg Glu Ala Asn Gln Glu Val Pro Arg Asp Phe Tyr Phe Tyr Gly Pro Val Phe Lys Thr Leu Ser Lys Pro Thr Leu Arg Pro 360 Leu Gln Gln Pro Ala Pro Ala Pro Pro Phe Asn Leu Arg Ser Leu Glu 375 Gly Val Glu Phe His Thr Pro Thr Gly Ser Phe Met Tyr Arg Glu Arg Gly Ser Val Asp Ser Phe Asn Glu Leu Pro Pro Phe Asn Pro Val Gly Leu Pro His Lys Val Tyr Ser His Arg Leu Cys His Ala Thr Phe Val Arg Lys Ser Gly Thr Pro Tyr Leu Thr Thr Gly Ala Ile Phe Ser Trp Thr His Arg Ser Ala Glu Glu Thr Asn Thr Ile Glu Ser Asn Ile Ile 455 Thr Gln Ile Pro Leu Val Lys Ala Tyr Gln Ile Gly Ser Gly Thr Thr 470 475 Val Arg Lys Gly Pro Gly Phe Thr Gly Gly Asp Ile Leu Arg Arg Thr

#### TIC900.ST25.txt

Gly Pro Gly Thr Phe Gly Asp Met Arg Ile Asn Ile Asn Ala Pro Leu 500 Ser Gln Arg Tyr Arg Val Arg Ile Arg Tyr Ala Ser Thr Thr Asp Leu 515

Gln Phe Val Thr Ser Ile Asn Gly Thr Thr Ile Asn Ile Gly Asn Phe 530 540

Pro Lys Thr Ile Asn Asn Leu Asn Thr Leu Gly Ser Glu Gly Tyr Arg 545 550 555

Thr Val Ser Phe Ser Thr Pro Phe Ser Phe Ser Asn Ala Gln Ser Ile 565 570 575

Phe Arg Leu Gly Ile Gln Ala Phe Ser Gly Val Gln Glu Val Tyr Val 580 585 590

Asp Lys Ile Glu Phe Ile Pro Val Glu 595 600

<210> 9

<211> 1803

<212> DNA

<213> Bacillus thuringiensis

<220>

<221> CDS

<222> (1)..(1803)

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<223> TIC404

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1 5 10 15

gac gcc aat att aat atg gag cgg ttt gat aag aat gat gca cta gaa 96
Asp Ala Asn Ile Asn Met Glu Arg Phe Asp Lys Asn Asp Ala Leu Glu
20 25 30

att ggc atg tcc att gta tct gaa ctt att ggt atg att cca ggc gga 144
Ile Gly Met Ser Ile Val Ser Glu Leu Ile Gly Met Ile Pro Gly Gly
35 40 45

aca gct tta caa ttt gtg ttt aat caa ttg tgg tct cgt tta ggt gat 192
Thr Ala Leu Gln Phe Val Phe Asn Gln Leu Trp Ser Arg Leu Gly Asp
50 55 60

tct gga tgg agt gca ttc atg gaa cat gtg gag gaa tta att gat act Ser Gly Trp Ser Ala Phe Met Glu His Val Glu Glu Leu Ile Asp Thr 65 70 75 80

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240

## TIC900.ST25.txt

aaa Lys	ata Ile	gaa Glu	ggg	tat Tyr 85	gca Ala	aaa Lys	aat Asn	aaa Lys	gcc Ala 90	tca Ser	tct Ser	gaa Glu	tta Leu	gca Ala 95	ggt Gly	288
ata Ile	caa Gln	aga Arg	aac Asn 100	ctt Leu	gaa Glu	aca Thr	tat Tyr	ata Ile 105	caa Gln	tta Leu	cgt Arg	aat Asn	gca Ala 110	tgg Trp	gaa Glu	336
aat Asn	gat Asp	atc Ile 115	gaa Glu	aac Asn	tca Ser	aag Lys	gct Ala 120	caa Gln	ggt Gly	aag Lys	gta Val	gct Ala 125	aat Asn	tac Tyr	tat Tyr	384
gaa Glu	agt Ser 130	ctt Leu	gag Glu	cag Gln	gcg Ala	gtt Val 135	gaa Glu	agg Arg	agt Ser	atg Met	cct Pro 140	Gln	ttt Phe	gca Ala	gtg Val	432
ggg Gly 145	Asn	ttt Phe	gaa Glu	gta Val	cca Pro 150	ctt Leu	tta Leu	act Thr	gtt Val	tat Tyr 155	gtg Val	caa Gln	gct Ala	gct Ala	aat Asn 160	480
ctt Leu	cat His	ata Ile	tta Leu	tta Leu 165	tta ·Leu	aga Arg	gat Asp	gtt Val	cta Leu 170	att Ile	tac Tyr	gga Gly	aag Lys	cgt Arg 175	tgg Trp	528
gga Gly	tgg Trp	tcg Ser	gag Glu 180	cag Gln	aaa Lys	att Ile	aaa Lys	att Ile 185	tat Tyr	tat Tyr	gat Asp	aga Arg	cag Gln 190	att Ile	aag Lys	576
tat Tyr	act Thr	cat His 195	gaa Glu	tac Tyr	aca Thr	aat Asn	cat His 200	tgt Cys	gta Val	aat Asn	tgg Trp	tat Tyr 205	aat Asn	aaa Lys	GJÀ aàa	624
ctt Leu	gag Glu 210	aga Arg	tta Leu	aaa Lys	aat Asn	aaa Lys 215	ggt Gly	tct Ser	tct Ser	tat Tyr	caa Gln 220	gat Asp	tgg Trp	tac Tyr	aat Asn	672
tat Tyr 225	aat Asn	cgt Arg	ttc Phe	cgt Arg	aga Arg 230	gaa Glu	atg Met	act Thr	ctt Leu	act Thr 235	gtt Val	tta Leu	gat Asp	atc Ile	gtt Val 240	720
gct Ala	tta Leu	ttc Phe	ccg Pro	cac His 245	tat Tyr	gat Asp	gta Val	caa Gln	act Thr 250	tat Tyr	cca Pro	ata Ile	aca Thr	acc Thr 255	gtt Val	768
gct Ala	cag Gln	cta Leu	aca Thr 260	agg Arg	gaa Glu	gtt Val	tat Tyr	acg Thr 265	gat Asp	cct Pro	tta Leu	ctt Leu	aat Asn 270	ttt Phe	aat Asn	816
cct Pro	aaa Lys	tta Leu 275	cat His	tct Ser	gtg Val	tct Ser	caa Gln 280	tta Leu	cct Pro	agt Ser	ttt Phe	agt Ser 285	gac Asp	atg Met	gaa Glu	864
aat Asn	gca Ala 290	aca Thr	att Ile	aga Arg	act Thr	cca Pro 295	cat His	ttg Leu	atg Met	gaa Glu	ttt Phe 300	tta Leu	aga Arg	atg Met	tta Leu	912
aca Thr 305	att Ile	tat Tyr	aca Thr	gat Asp	tgg Trp 310	tat Tyr	agt Ser	gtg Val	gga Gly	aga Arg 315	aac Asn	tat Tyr	tat Tyr	tgg Trp	gga Gly 320	960
gga Gly	cat His	cgc Arg	gtg Val	acg Thr 325	tct Ser	tac Tyr	cat His	Val	gga Gly 330	gga Gly	gag Glu	aat Asn	ata Ile	aga Arg 335	tcc Ser	1008
cct Pro	cta Leu	tat Tyr	ggt Gly 340	aga Arg	gag Glu	gca Ala	Asn	caa Gln 345	gag Glu	gtt Val	cct Pro	aga Arg	gat Asp 350	ttt Phe	tat Tyr	1056

					T	C900	.sT2	25.tx	٤t		
			aag Lys		tca	aaa	ccg	act	cta		1104
			gct Ala 375								1152
			cct Pro								1200
			aat Asn								1248
			agt Ser								1296
			tat Tyr								1344
			gaa Glu 455								1392
			aaa Lys								1440
			ttc Phe								1488
			gat Asp								1536
			agg Arg								1584
			aat Asn 535								1632
			cta Leu								1680
			cca Pro								1728
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<210> 10

<211> 601

TIC900.ST25.txt

<212> PRT

<213> Bacillus thuringiensis

<400> 10

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Asp Ala Asn Ile Asn Met Glu Arg Phe Asp Lys Asn Asp Ala Leu Glu 20 25 30

Ile Gly Met Ser Ile Val Ser Glu Leu Ile Gly Met Ile Pro Gly Gly 35 40

Thr Ala Leu Gln Phe Val Phe Asn Gln Leu Trp Ser Arg Leu Gly Asp 50 55

Ser Gly Trp Ser Ala Phe Met Glu His Val Glu Glu Leu Ile Asp Thr 65 70 75 80

Lys Ile Glu Gly Tyr Ala Lys Asn Lys Ala Ser Ser Glu Leu Ala Gly 85 90 95

Ile Gln Arg Asn Leu Glu Thr Tyr Ile Gln Leu Arg Asn Ala Trp Glu 100 105 110

Asn Asp Ile Glu Asn Ser Lys Ala Gln Gly Lys Val Ala Asn Tyr Tyr 115 120 125

Glu Ser Leu Glu Gln Ala Val Glu Arg Ser Met Pro Gln Phe Ala Val 130 135 140

Gly Asn Phe Glu Val Pro Leu Leu Thr Val Tyr Val Gln Ala Ala Asn 145 150 155 160

Leu His Ile Leu Leu Arg Asp Val Leu Ile Tyr Gly Lys Arg Trp 165 170 175

Gly Trp Ser Glu Gln Lys Ile Lys Ile Tyr Tyr Asp Arg Gln Ile Lys 180 185 190

Tyr Thr His Glu Tyr Thr Asn His Cys Val Asn Trp Tyr Asn Lys Gly
195 200 205

Leu Glu Arg Leu Lys Asn Lys Gly Ser Ser Tyr Gln Asp Trp Tyr Asn 210 215 220

Tyr Asn Arg Phe Arg Arg Glu Met Thr Leu Thr Val Leu Asp Ile Val 225 230 235 240

Ala Leu Phe Pro His Tyr Asp Val Gln Thr Tyr Pro Ile Thr Thr Val Page 20

	TIC900.ST25.txt
245	250

255 Ala Gln Leu Thr Arg Glu Val Tyr Thr Asp Pro Leu Leu Asn Phe Asn 265 Pro Lys Leu His Ser Val Ser Gln Leu Pro Ser Phe Ser Asp Met Glu Asn Ala Thr Ile Arg Thr Pro His Leu Met Glu Phe Leu Arg Met Leu Thr Ile Tyr Thr Asp Trp Tyr Ser Val Gly Arg Asn Tyr Tyr Trp Gly 310 Gly His Arg Val Thr Ser Tyr His Val Gly Glu Asn Ile Arg Ser Pro Leu Tyr Gly Arg Glu Ala Asn Gln Glu Val Pro Arg Asp Phe Tyr Phe Tyr Gly Pro Val Phe Lys Thr Leu Ser Lys Pro Thr Leu Arg Pro Leu Gln Gln Pro Ala Pro Ala Pro Pro Phe Asn Leu Arg Ser Leu Glu Gly Val Glu Phe His Thr Pro Thr Gly Ser Phe Met Tyr Arg Glu Arg Gly Ser Val Asp Ser Phe Asn Glu Leu Pro Pro Phe Asn Pro Val Gly 410 Leu Pro His Lys Val Tyr Ser His Arg Leu Cys His Ala Thr Phe Val Arg Lys Ser Gly Thr Pro Tyr Leu Thr Thr Gly Ala Ile Phe Thr Trp Thr His Arg Ser Ala Glu Glu Thr Asn Thr Ile Glu Ser Asn Ile Ile Thr Gln Ile Pro Leu Val Lys Ala Tyr Gln Ile Gly Ser Gly Thr Thr Val Arg Lys Gly Pro Gly Phe Thr Gly Gly Asp Ile Leu Arg Arg Thr Gly Pro Gly Thr Phe Gly Asp Met Lys Val Asn Ile His Ala Pro Leu Ser Gln Lys Tyr Arg Val Arg Ile Arg Tyr Ala Ser Thr Thr Asp Leu

520

## TIC900.ST25.txt

Gln Phe Val Thr Ser Ile Asn Gly Thr Thr Ile Asn Ile Gly Asn Phe 530 535 540

Pro Lys Thr Thr Asn Asn Leu Asn Thr Leu Gly Ser Glu Ser Tyr Arg 545 550 550 560

Thr Val Ser Phe Ser Thr Pro Phe Ser Phe Ser Asn Ala Gln Ser Ile 565 570 575

Phe Arg Leu Gly Ile Gln Ala Phe Ser Gly Val Gln Glu Val Tyr Val 580 585

Asp Lys Ile Glu Phe Ile Pro Val Glu 595 600

<210> 11

<211> 1803

<212> DNA

<213> Bacillus thuringiensis

<220>

<221> CDS

<222> (1)..(1803)

<223> TIC961

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Met 1	Asn	Ser	Thr	Glu 5	His	Āsp	Tyr	Leu	Lys 10	Ϋal	Cys	Asn	Āsp	Leu 15	Ser		
							cgg Arg									9	6
att Ile	ggt Gly	atg Met 35	tcc Ser	att Ile	gta Val	tct Ser	gaa Glu 40	ctt Leu	att Ile	ggt Gly	atg Met	att Ile 45	cca Pro	ggc Gly	gga Gly	14	4
aca Thr	gct Ala 50	ttg Leu	caa Gln	ttt Phe	gtg Val	ttt Phe 55	aat Asn	caa Gln	ttg Leu	tgg Trp	tct Ser 60	cgt Arg	tta Leu	ggt Gly	gat Asp	19	2
tct Ser 65	gga Gly	tgg Trp	aat Asn	gcg Ala	ttc Phe 70	atg Met	gaa Glu	cat His	gtg Val	gag Glu 75	gaa Glu	tta Leu	att Ile	gat Asp	act Thr 80	24	0
aaa Lys	ata Ile	gaa Glu	ggg Gly	tat Tyr 85	gca Ala	aaa Lys	aat Asn	aaa Lys	gcc Ala 90	tta Leu	tct Ser	gaa Glu	tta Leu	gca Ala 95	ggt Gly	28	8
ata Ile	caa Gln	aga Arg	aac Asn	ctt Leu	gaa Glu	aca Thr	tat Tyr	ata Ile	caa Gln	tta Leu	cgt Arg	aat Asn	gaa Glu	tgg Trp	gaa Glu	33	6

TIC900.ST25.txt

			100	)				105		11090	, o . 5	125.0	110	0		
aat Asn	gat Asp	at: 11:	e eri	a aad 1 Asi	c tca n Sen	a aag Lys	get Ala 120	Glr	a ggt n Gly	aaq Y Lys	g gta	a gct l Ala 125	a Ası	t tac n Ty:	c tat r Tyr	384
gaa Glu	agt Ser 130	. пе	t gag u Glu	g caq n Glr	g gcg	gtt Val 135	. Gli	a ago 1 Aro	g agt g Ser	ato Met	9 cc: Pro 140	o Glr	a tti n Phe	gca Ala	a gtg a Val	432
ggg Gly 145	MOI	tti Phe	t gaa e Glu	gta Val	e cca Pro 150	) ren	tta Leu	a act 1 Thr	gto Val	tat Tyr 155	: Val	g caa l Glr	a gct n Ala	get Ala	aat Asn 160	480
ctt Leu	cat His	tta Le	a tta 1 Leu	tta Leu 165	і гел	aga Arg	gat Asp	gtt Val	tca Ser 170	: Val	tat Tyi	t gga r Gly	aaq Lys	g cgt Arg 175	tgg Trp	528
gga Gly	tgg Trp	tco Sei	g gag Glu 180	GIn	aaa Lys	att Ile	aaa Lys	att Ile 185	Tyr	tat Tyr	gat Asp	aaa Lys	caç Glr 190	ıle	aag Lys	576
tat Tyr	acc Thr	His 195	GIU	tac Tyr	aca Thr	aat Asn	cat His 200	Cys	gta Val	aat Asn	tgg Trp	tato Tyr 205	Asn	aaa Lys	gga Gly	624
Leu	gag Glu 210	Arg	tta J Leu	aaa Lys	aat Asn	aaa Lys 215	ggt Gly	tct Ser	tct Ser	tat Tyr	Glr 220	Asp	tgg Trp	tac Tyr	aat Asn	672
tat Tyr 225	aat Asn	cgt Arg	ttc Phe	cgt Arg	aga Arg 230	gaa Glu	atg Met	act Thr	ctt Leu	act Thr 235	Val	tta Leu	gat Asp	atc Ile	gtt Val 240	720
gct Ala	tta Leu	ttc Phe	ccg Pro	cac His 245	Tyr	gat Asp	gta Val	caa Gln	act Thr 250	tat Tyr	cca Pro	ata Ile	aca Thr	acc Thr 255	gtt Val	768
gct Ala	cag Gln	cta Leu	aca Thr 260	agg Arg	gaa Glu	gtt Val	tat Tyr	acg Thr 265	gat Asp	cct Pro	tta Leu	ctt Leu	aat Asn 270	ttt Phe	aat Asn	816
PIO	ьуѕ	ьеи 275	cat His	Ser	Val	Ser	Gln 280	Leu	Pro	Ser	Phe	Ser 285	Asp	Met	Glu	864
ASII	290	Thr	att Ile	Arg	Thr	Pro 295	His	Leu	Met	Glu	Phe 300	Leu	Arg	Met	Leu	912
305	TTE	туг	aca Thr	Asp	310	Tyr	Ser	Val	Gly	Arg 315	Asn	Tyr	Tyr	Trp	Gly 320	960
gga Gly	cat His	cgc Arg	gtg Val	acg Thr 325	tct Ser	tac Tyr	cat His	gta Val	gga Gly 330	gga Gly	gag Glu	aat Asn	ata Ile	aga Arg 335	tca Ser	1008
cct Pro	cta Leu	tat Tyr	ggt Gly 340	aga Arg	gag Glu	gca Ala	aat Asn	caa Gln 345	gag Glu	gtt Val	cct Pro	aga Arg	gat Asp 350	ttt Phe	tat Tyr	1056
ttt Phe	Tyr	gga Gly 355	ccc Pro	gtt Val	ttt Phe	Lys	acg Thr 360	tta Leu	tca Ser	aag Lys	ccg Pro	act Thr 365	cta Leu	aga Arg	cca Pro	1104
tta Leu	cag Gln 370	cag Gln	cct Pro	gca Ala	Pro	gct Ala 375	cct Pro	cct Pro	ttt Phe	aat Asn	tta Leu 380	cgt Arg	agc Ser	tta Leu	gag Glu	1152

## TIC900.ST25.txt

gga Gly 385	gta Val	gaa Glu	ttc Phe	cac His	act Thr 390	cct Pro	aca Thr	ggt Gly	agt Ser	ttt Phe 395	atg Met	tat Tyr	cgt Arg	gaa Glu	aga Arg 400	1200
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tta Leu	cct Pro	cat His	aag Lys 420	gta Val	tac Tyr	agt Ser	cac His	cgt Arg 425	tta Leu	tgt Cys	cat His	gca Ala	acg Thr 430	ttt Phe	gtt Val	1296
cgt Arg	aaa Lys	tct Ser 435	ggg Gly	acc Thr	cct Pro	tat Tyr	tta Leu 440	aca Thr	aca Thr	ggt Gly	gcc Ala	atc Ile 445	ttt Phe	tct Ser	tgg Trp	1344
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acg Thr 465	caa Gln	atc Ile	ccg Pro	tta Leu	gta Val 470	aaa Lys	gca Ala	tat Tyr	caa Gln	att Ile 475	GJÀ āàà	tca Ser	ggc Gly	act Thr	act Thr 480	1440
gta Val	agg Arg	aaa Lys	gga Gly	cca Pro 485	gga Gly	ttc Phe	aca Thr	gga Gly	ggg Gly 490	gat Asp	ata Ile	ctt Leu	cga Arg	aga Arg 495	aca Thr	1488
ggt Gly	cct Pro	gga Gly	aca Thr 500	ttt Phe	gga Gly	gat Asp	atg Met	aga Arg 505	ata Ile	aat Asn	att Ile	aat Asn	gca Ala 510	cca Pro	tta Leu	1536
tct Ser	caa Gln	aga Arg 515	tat Tyr	cgt Arg	gta Val	agg Arg	att Ile 520	cgt Arg	tat Tyr	gct Ala	tct Ser	acg Thr 525	aca Thr	gat Asp	tta Leu	1584
caa Gln	ttt Phe 530	gtc Val	acg Thr	agt Ser	att Ile	aat Asn 535	Gly	acc Thr	acc Thr	att Ile	aat Asn 540	att Ile	ggt Gly	aac Asn	ttc Phe	1632
cca Pro 545	aaa Lys	act Thr	att Ile	aat Asn	aat Asn 550	cta Leu	aat Asn	act Thr	tta Leu	ggt Gly 555	tct Ser	gag Glu	ggc Gly	tat Tyr	aga Arg 560	1680
aca Thr	gta Val	tcg Ser	ttt Phe	agt Ser 565	act Thr	cca Pro	ttt Phe	agt Ser	ttc Phe 570	tca Ser	aat Asn	gca Ala	caa Gln	agc Ser 575	ata Ile	1728
ttt Phe	aga Arg	tta Leu	ggt Gly 580	ata Ile	caa Gln	gca Ala	ttt Phe	tct Ser 585	gga Gly	gtt Val	caa Gln	gaa Glu	gtt Val 590	tat Tyr	gtg Val	1776
gat Asp	aaa Lys	att Ile 595	gaa Glu	ttt Phe	att Ile	cct Pro	gtt Val 600	gaa Glu								1803

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<211> 601

<212> PRT

<213> Bacillus thuringiensis

<400> 12

## TIC900.ST25.txt

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Asp Ala Asn Ile Asn Met Glu Arg Phe Asp Lys Asn Asp Ala Leu Glu 20 25 30

Ile Gly Met Ser Ile Val Ser Glu Leu Ile Gly Met Ile Pro Gly Gly
35 40 45

Thr Ala Leu Gln Phe Val Phe Asn Gln Leu Trp Ser Arg Leu Gly Asp
50 55 60

Ser Gly Trp Asn Ala Phe Met Glu His Val Glu Glu Leu Ile Asp Thr 65 70 75 80

Lys Ile Glu Gly Tyr Ala Lys Asn Lys Ala Leu Ser Glu Leu Ala Gly 85 90 95

Ile Gln Arg Asn Leu Glu Thr Tyr Ile Gln Leu Arg Asn Glu Trp Glu
100 105 110

Asn Asp Ile Glu Asn Ser Lys Ala Gln Gly Lys Val Ala Asn Tyr Tyr 115 120 125

Glu Ser Leu Glu Gln Ala Val Glu Arg Ser Met Pro Gln Phe Ala Val 130 135 140

Gly Asn Phe Glu Val Pro Leu Leu Thr Val Tyr Val Gln Ala Ala Asn 145 150 155 160

Leu His Leu Leu Leu Arg Asp Val Ser Val Tyr Gly Lys Arg Trp
165 170 175

Gly Trp Ser Glu Gln Lys Ile Lys Ile Tyr Tyr Asp Lys Gln Ile Lys 180 185 190

Tyr Thr His Glu Tyr Thr Asn His Cys Val Asn Trp Tyr Asn Lys Gly 195 200 205

Leu Glu Arg Leu Lys Asn Lys Gly Ser Ser Tyr Gln Asp Trp Tyr Asn 210 215 220

Tyr Asn Arg Phe Arg Arg Glu Met Thr Leu Thr Val Leu Asp Ile Val 225 230 235 240

Ala Leu Phe Pro His Tyr Asp Val Gln Thr Tyr Pro Ile Thr Thr Val 245 250 255

Ala Gln Leu Thr Arg Glu Val Tyr Thr Asp Pro Leu Leu Asn Phe Asn 260 265 270

TIC900.ST25.txt

Pro Lys Leu His Ser Val Ser Gln Leu Pro Ser Phe Ser Asp Met Glu 275 280 285

Asn Ala Thr Ile Arg Thr Pro His Leu Met Glu Phe Leu Arg Met Leu 290 295 300

Thr Ile Tyr Thr Asp Trp Tyr Ser Val Gly Arg Asn Tyr Tyr Trp Gly 305 310 . 315 320

Gly His Arg Val Thr Ser Tyr His Val Gly Glu Asn Ile Arg Ser

Pro Leu Tyr Gly Arg Glu Ala Asn Gln Glu Val Pro Arg Asp Phe Tyr 340 345 350

Phe Tyr Gly Pro Val Phe Lys Thr Leu Ser Lys Pro Thr Leu Arg Pro 355 360 365

Leu Gln Gln Pro Ala Pro Ala Pro Pro Phe Asn Leu Arg Ser Leu Glu 370 375 380

Gly Val Glu Phe His Thr Pro Thr Gly Ser Phe Met Tyr Arg Glu Arg 385 390 395 400

Gly Ser Val Asp Pro Phe Asn Glu Leu Pro Pro Phe Asn Pro Val Gly 405 410 415

Leu Pro His Lys Val Tyr Ser His Arg Leu Cys His Ala Thr Phe Val 420 425 430

Arg Lys Ser Gly Thr Pro Tyr Leu Thr Thr Gly Ala Ile Phe Ser Trp 435

Thr His Arg Ser Ala Glu Glu Thr Asn Thr Ile Glu Ser Asn Ile Ile
450 455 460

Thr Gln Ile Pro Leu Val Lys Ala Tyr Gln Ile Gly Ser Gly Thr Thr 465 470 475 480

Val Arg Lys Gly Pro Gly Phe Thr Gly Gly Asp Ile Leu Arg Arg Thr
485 490 495

Gly Pro Gly Thr Phe Gly Asp Met Arg Ile Asn Ile Asn Ala Pro Leu
500 505 510

Ser Gln Arg Tyr Arg Val Arg Ile Arg Tyr Ala Ser Thr Thr Asp Leu 515 520 525

Gln Phe Val Thr Ser Ile Asn Gly Thr Thr Ile Asn Ile Gly Asn Phe 530 535 540

Pro Lys Thr Ile Asn Asn Leu Asn Thr Leu Gly Ser Glu Gly Tyr Arg Page 26

560

	T	C900.ST25.txt
545	550	555

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<220>

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<222> (1)..(1803)

<223> TIC962

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Asp Ala Asn Ile Asn Met Glu Arg Phe Asp Lys Asn Asp Ala Leu Glu
20 25 30

att ggt atg tcc att gta tct gaa ctt att ggt atg att cca ggc ggg 144

aca gct ttg caa ttt gtg ttt aat caa ttg tgg tct cgt tta ggt gat
Thr Ala Leu Gln Phe Val Phe Asn Gln Leu Trp Ser Arg Leu Gly Asp

Ile Gly Met Ser Ile Val Ser Glu Leu Ile Gly Met Ile Pro Gly Gly

tct gga tgg aat gcg ttc atg gaa cat gtg gag gaa tta att gat gct
Ser Gly Trp Asn Ala Phe Met Glu His Val Glu Glu Leu Ile Asp Ala
65 70 75 80

aaa ata gaa ggg tat gca aaa aat aaa gcc tta tct gaa tta gca ggt
Lys Ile Glu Gly Tyr Ala Lys Asn Lys Ala Leu Ser Glu Leu Ala Gly

ata caa aga aac ctt gaa aca tat ata caa tta cgt aat gaa tgg gaa

Ile Gln Arg Asn Leu Glu Thr Tyr Ile Gln Leu Arg Asn Glu Trp Glu

aat gat att gaa aac tca aag gct caa ggt aag gta gct aat tac tat
Asn Asp Ile Glu Asn Ser Lys Ala Gln Gly Lys Val Ala Asn Tyr Tyr
115
120
125

gaa agt ctt gag cag gcg gtt gaa agg agt atg cct caa ttt gca gtg 432

Glu	Ser 130	Leu	Glu	Gln	Ala	Val 135	Glu	Arg			Pro 140			Ala	Val	
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					tta Leu	-	_	-		_			_	_		528
					aaa Lys											576
					aca Thr											624
					aat Asn											672
					aga Arg 230											720
					tat Tyr											768
_	_				gaa Glu	_		_	_							816
					gtg Val											864
	_			_	act Thr			_	_	_			_	_		912
				_	tgg Trp 310		_			_						960
gga Gly	cat His	cgc Arg	gtg Val	acg Thr 325	tct Ser	tac Tyr	cat His	gta Val	gga Gly 330	gga Gly	gag Glu	aat Asn	ata Ile	aga Arg 335	tca Ser	1008
					gag Glu											1056
_				_	ttt Phe	_	_			_	-			-		1104
					cca Pro											1152
					act Thr 390											1200
					ttt Phe											1248

Page 28

	TIC900.ST25.txt
405	410

				405					410					415		
						agt Ser										1296
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aca Thr	ćat His 450	cgt Arg	agt Ser	gct Ala	gaa Glu	gaa Glu 455	acc Thr	aat Asn	aca Thr	att Ile	gaa Glu 460	tca Ser	aat Asn	att Ile	att Ile	1392
						aaa Lys										1440
gta Val	agg Arg	aaa Lys	gga Gly	cca Pro 485	gga Gly	ttc Phe	aca Thr	gga Gly	ggg Gly 490	gat Asp	ata Ile	ctt Leu	cga Arg	aga Arg 495	aca Thr	1488
						gat Asp										1536
						agg Arg										1584
						aat Asn 535										1632
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<400> 14

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#### TIC900.ST25.txt

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Ser Gly Trp Asn Ala Phe Met Glu His Val Glu Glu Leu Ile Asp Ala 65 70 75 80

Lys Ile Glu Gly Tyr Ala Lys Asn Lys Ala Leu Ser Glu Leu Ala Gly 85 90 95

Ile Gln Arg Asn Leu Glu Thr Tyr Ile Gln Leu Arg Asn Glu Trp Glu 100 105 110

Asn Asp Ile Glu Asn Ser Lys Ala Gln Gly Lys Val Ala Asn Tyr Tyr 115 120 125

Glu Ser Leu Glu Gln Ala Val Glu Arg Ser Met Pro Gln Phe Ala Val 130 135 140

Glu Asn Phe Glu Val Pro Leu Leu Thr Val Tyr Val Gln Ala Ala Asn 145 150 155 160

Leu His Leu Leu Leu Arg Asp Val Ser Val Tyr Gly Lys Cys Trp 165 170 170

Gly Trp Ser Glu Gln Lys Ile Lys Ile Tyr Tyr Asp Lys Gln Ile Lys 180 185 190

Tyr Thr His Glu Tyr Thr Asn His Cys Val Asn Trp Tyr Asn Lys Gly 195 200 205

Leu Glu Arg Leu Lys Asn Lys Gly Ser Ser Tyr Gln Asp Trp Tyr Asn 210 215 220

Tyr Asn Arg Phe Arg Arg Glu Met Thr Leu Thr Val Leu Asp Ile Val 225 230 235 240

Ala Leu Phe Pro His Tyr Asp Val Gln Thr Tyr Pro Ile Thr Thr Val 245 250 255

Ala Gln Leu Thr Arg Glu Val Tyr Thr Asp Pro Leu Leu Asn Phe Asn 260 265 270

Pro Lys Leu His Ser Val Ser Gln Leu Pro Ser Phe Ser Asp Met Glu 275 280 285

Asn Ala Thr Ile Arg Thr Pro His Leu Met Glu Phe Leu Arg Met Leu 290 295 300

## TIC900.ST25.txt

Thr	Ile	Tyr	Thr	Asp	$\mathtt{Trp}$	Tyr	Ser	Val	Gly	Arg	Asn	Tyr	Tyr	Trp	Gly
305					310				_	315		-	-		320

- Gly His Arg Val Thr Ser Tyr His Val Gly Glu Asn Ile Arg Ser 325 330 335
- Pro Leu Tyr Gly Arg Glu Ala Asn Gln Glu Val Pro Arg Asp Phe Tyr 340 345 350
- Phe Tyr Gly Pro Val Phe Lys Thr Leu Ser Lys Pro Thr Leu Arg Pro 355 360 365
- Leu Gln Gln Pro Ala Pro Ala Pro Pro Phe Asn Leu Arg Ser Leu Glu 370 375 380
- Gly Val Glu Phe His Thr Pro Thr Gly Ser Phe Met Tyr Arg Glu Arg 385 390 395 400
- Gly Ser Val Asp Ser Phe Asn Glu Leu Pro Pro Phe Asn Pro Val Gly
  405 410 415
- Leu Pro His Lys Val Tyr Ser His Arg Leu Cys His Ala Thr Phe Val 420 425 430
- Arg Lys Ser Gly Thr Pro Tyr Leu Thr Thr Gly Ala Ile Phe Ser Trp
  435 440 445
- Thr His Arg Ser Ala Glu Glu Thr Asn Thr Ile Glu Ser Asn Ile Ile 450 450 460
- Thr Gln Ile Pro Leu Val Lys Ala Tyr Gln Ile Gly Ser Gly Thr Thr 465 470 475
- Val Arg Lys Gly Pro Gly Phe Thr Gly Gly Asp Ile Leu Arg Arg Thr 485 490 495
- Gly Pro Gly Thr Phe Gly Asp Met Arg Ile Asn Ile Asn Ala Pro Leu 500 505 510
- Ser Gln Arg Tyr Arg Val Arg Ile Arg Tyr Ala Ser Thr Thr Asp Leu 515 520 525
- Gln Phe Val Thr Ser Ile Asn Gly Thr Thr Ile Asn Ile Gly Asn Phe 530 540
- Pro Lys Thr Ile Asn Asn Leu Asn Thr Leu Gly Ser Glu Gly Tyr Arg 545 550 555 560
- Thr Val Ser Phe Ser Thr Pro Phe Ser Phe Ser Asn Ala Gln Ser Ile 565 570 575

TIC900.ST25.txt

Phe Arg Leu Gly Ile Gln Ala Phe Ser Gly Val Gln Glu Val Tyr Val 580 585 590

Asp Lys Ile Glu Phe Ile Pro Val Glu 595 600

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<220>

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<222> (1)..(1803)

<223> TIC963

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Ile Gly Met Ser Ile Val Ser Glu Leu Ile Gly Met Ile Pro Gly Gly 45  aca gct tta caa ttt gtg ttt aat caa ttg tgg tct cgt tta ggt gat 192 Thr Ala Leu Gln Phe Val Phe Asn Gln Leu Trp Ser Arg Leu Gly Asp 50  tct gga tgg agt gca ttc atg gaa cat gtg gag gaa tta att gat act Ser Gly Trp Ser Ala Phe Met Glu His Val Glu Glu Leu Ile Asp Thr 70  aaa ata gaa ggg tat gca aaa aat aaa gcc tta tct gaa tta gca ggt Lys Ile Glu Gly Tyr Ala Lys Asn Lys Ala Leu Ser Glu Leu Ala Gly 95  ata caa aga acc ctt gaa aca tat ata caa tta cgt aat gca tgg gaa Ile Gln Arg Asn Leu Glu Thr Tyr Ile Gln Leu Arg Asn Ala Trp Glu 100  aat gat atc gaa aac tca aag gct caa ggt agg daag gta gct aat tac tat Asn Asp Ile Glu Asn Ser Lys Ala Gln Gly Lys Val Ala Asn Tyr Tyr 115  gaa agt ctt gag cag gcg gtt gaa agg agt atg cct caa tct gca gtg Glu Ser Leu Glu Gln Ala Val Glu Arg Ser Met Pro Gln Ser Ala Val 130  ggg aat ttt gaa gta cca ctt tta act gtt tat gtg caa gct gct aat Asn Ala Ala Asn Phe Glu Val Pro Leu Leu Thr Val Tyr Val Gln Ala Ala Asn  480				Ile					Phe					Āla			96
Thr Ala Leu Gln Phe Val Phe Asn Gln Leu Trp Ser Arg Leu Gly Asp 50 tct gga tgg agt gca ttc atg gaa cat gtg gag gaa tta att gat act Ser Gly Trp Ser Ala Phe Met Glu His Val Glu Glu Leu Ile Asp Thr 75 80 aaa ata gaa ggg tat gca aaa aat aaa gcc tta tct gaa tta gca ggt Lys Ile Glu Gly Tyr Ala Lys Asn Lys Ala Leu Ser Glu Leu Ala Gly 95 ata caa aga aac ctt gaa aca tat ata caa tta cgt aat gca tgg gaa Ile Gln Arg Asn Leu Glu Thr Tyr Ile Gln Leu Arg Asn Ala Trp Glu 100 aat gat atc gaa aac tca aag gct caa ggt agg gta gct aat tac tat Asn Asp Ile Glu Asn Ser Lys Ala Gln Gly Lys Val Ala Asn Tyr Tyr 115			Met					Glu					Ile				144
Ser Gly Trp Ser Ala Phe Met Glu His Val Glu Glu Leu Ile Asp Thr 80  aaa ata gaa ggg tat gca aaa aat aaa gcc tta tct gaa tta gca ggt Lys Ile Glu Gly Tyr Ala Lys Asn Lys Ala Leu Ser Glu Leu Ala Gly 95  ata caa aga aac ctt gaa aca tat ata caa tta cgt aat gca tgg gaa Ile Gln Arg Asn Leu Glu Thr Tyr Ile Gln Leu Arg Asn Ala Trp Glu 100  aat gat atc gaa aac tca aag gct caa ggt aag gta gct aat tac tat Asn Asp Ile Glu Asn Ser Lys Ala Gln Gly Lys Val Ala Asn Tyr Tyr 115  gaa agt ctt gag cag gcg gtt gaa agg agt atg cct caa tct gca gtg Glu Ser Leu Glu Gln Ala Val Glu Arg Ser Met Pro Gln Ser Ala Val 130  ggg aat ttt gaa gta cca ctt tta act gtt tat gtg caa gct gct aat Gly Asn Phe Glu Val Pro Leu Leu Thr Val Tyr Val Gln Ala Ala Asn		Āla					Phe					Ser					192
Lys Ile Glu Gly Tyr Ala Lys Asn Lys Ala Leu Ser Glu Leu Ala Gly 90  ata caa aga aac ctt gaa aca tat ata caa tta cgt aat gca tgg gaa Ile Gln Arg Asn Leu Glu Thr Tyr Ile Gln Leu Arg Asn Ala Trp Glu 100  aat gat atc gaa aac tca aag gct caa ggt aag gta gct aat tac tat Asn Asp Ile Glu Asn Ser Lys Ala Gln Gly Lys Val Ala Asn Tyr Tyr 115  gaa agt ctt gag cag gcg gtt gaa agg agt atg cct caa tct gca gtg Glu Ser Leu Glu Gln Ala Val Glu Arg Ser Met Pro Gln Ser Ala Val 130  ggg aat ttt gaa gta cca ctt tta act gtt tat gtg caa gct gct aat 480  ggg aat ttt gaa gta cca ctt tta act gtt tat gtg caa gct gct aat 619 Asn Phe Glu Val Pro Leu Leu Thr Val Tyr Val Gln Ala Ala Asn	Ser					Phe					Glu					Thr	240
Ile Gln Arg Asn Leu Glu Thr Tyr Ile Gln Leu Arg Asn Ala Trp Glu 100					Tyr					Ala					Ala		288
Asn Asp Ile Glu Asn Ser Lys Ala Gln Gly Lys Val Ala Asn Tyr Tyr 115  gaa agt ctt gag cag gcg gtt gaa agg agt atg cct caa tct gca gtg Glu Ser Leu Glu Gln Ala Val Glu Arg Ser Met Pro Gln Ser Ala Val 130  ggg aat ttt gaa gta cca ctt tta act gtt tat gtg caa gct gct aat Gly Asn Phe Glu Val Pro Leu Leu Thr Val Tyr Val Gln Ala Ala Asn				Asn					Ile					Ala			336
Glu Ser Leu Glu Gln Ala Val Glu Arg Ser Met Pro Gln Ser Ala Val 130 135 140  ggg aat ttt gaa gta cca ctt tta act gtt tat gtg caa gct gct aat Gly Asn Phe Glu Val Pro Leu Leu Thr Val Tyr Val Gln Ala Ala Asn			Ile					Ala					Ala				384
Gly Asn Phe Glu Val Pro Leu Leu Thr Val Tyr Val Gln Ala Ala Asn		Ser					Val					Pro					432
	Gly	Asn				Pro					Tyr					Asn	480

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gga Gly	tgg Trp	tcg Ser	gag Glu 180	Gln	aaa Lys	att Ile	aaa Lys	att Ile 185	Tyr	tat Tyr	gat Asp	aga Arg	Cag Gln 190	Ile	aag Lys	576
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tat Tyr 225	Asn	cgt Arg	ttc Phe	cgt Arg	aga Arg 230	gaa Glu	atg Met	act Thr	ctt Leu	act Thr 235	gtt Val	tta Leu	gat Asp	atc	gtt Val 240	720
gct Ala	tta Leu	ttc Phe	ccg Pro	cac His 245	Tyr	gat Asp	gta Val	caa Gln	act Thr 250	Tyr	cca Pro	ata Ile	aca Thr	acc Thr 255	Val	768
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ggt Gly	cct Pro	gga Gly	aca Thr 500	ttt Phe	gga Gly	gat Asp	atg Met	aaa Lys 505	gta Val	aat Asn	att Ile	cat His	gca Ala 510	cca Pro	tta Leu	1536
tcc Ser	caa Gln	aaa Lys 515	tat Tyr	cgt Arg	gta Val	agg Arg	att Ile 520	cgt Arg	tat Tyr	gct Ala	tct Ser	acg Thr 525	aca Thr	gat Asp	tta Leu	1584
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cca Pro 545	aaa Lys	act Thr	act Thr	aat Asn	aat Asn 550	cta Leu	aat Asn	act Thr	tta Leu	ggt Gly 555	tct Ser	gag Glu	agc Ser	tat Tyr	aga Arg 560	1680
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<211> 601

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<213> Bacillus thuringiensis

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Ile Gly Met Ser Ile Val Ser Glu Leu Ile Gly Met Ile Pro Gly Gly 35

Thr Ala Leu Gln Phe Val Phe Asn Gln Leu Trp Ser Arg Leu Gly Asp Page 34

TIC900.ST25.txt

50

Ser Gly Trp Ser Ala Phe Met Glu His Val Glu Glu Leu Ile Asp Thr 70 75 ... 80

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Asn Asp Ile Glu Asn Ser Lys Ala Gln Gly Lys Val Ala Asn Tyr Tyr 115 120 125

Glu Ser Leu Glu Gln Ala Val Glu Arg Ser Met Pro Gln Ser Ala Val 130 135 140

Gly Asn Phe Glu Val Pro Leu Leu Thr Val Tyr Val Gln Ala Ala Asn 145 150 155 160

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Leu Glu Arg Leu Lys Asn Lys Gly Ser Ser Tyr Gln Asp Trp Tyr Asn 210 220

Tyr Asn Arg Phe Arg Glu Met Thr Leu Thr Val Leu Asp Ile Val 225 235 240

Ala Leu Phe Pro His Tyr Asp Val Gln Thr Tyr Pro Ile Thr Thr Val 245 250 255

Ala Gln Leu Thr Arg Glu Val Tyr Thr Asp Pro Leu Leu Asn Phe Asn 260 265 270

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Asn Ala Thr Ile Arg Thr Pro His Leu Met Glu Phe Leu Arg Met Leu 290 295 300

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## TIC900.ST25.txt

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Phe Tyr Gly Pro Val Phe Lys Thr Leu Ser Lys Pro Thr Leu Arg Pro 355 360 365

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Arg Lys Ser Gly Thr Pro Tyr Leu Thr Thr Gly Ala Ile Phe Thr Trp 435 . 440 . 445

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Thr Gln Ile Pro Leu Val Lys Ala Tyr Gln Ile Gly Ser Gly Thr Thr 465 470 475 480

Val Arg Lys Gly Pro Gly Phe Thr Gly Gly Asp Ile Leu Arg Arg Thr 485 490 495

Gly Pro Gly Thr Phe Gly Asp Met Lys Val Asn Ile His Ala Pro Leu 500 505 510

Ser Gln Lys Tyr Arg Val Arg Ile Arg Tyr Ala Ser Thr Thr Asp Leu 515 520 525

Gln Phe Val Thr Ser Ile Asn Gly Thr Thr Ile Asn Ile Gly Asn Phe 530 535 540

Pro Lys Thr Thr Asn Asn Leu Asn Thr Leu Gly Ser Glu Ser Tyr Arg 545 550 560

Thr Val Ser Phe Ser Thr Pro Phe Ser Phe Ser Asn Ala Gln Ser Ile 565 570 575

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# TIC900.ST25.txt

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TIC900.ST25.txt

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Tyr Asn Arg Phe Arg Arg Glu Met Thr Leu Thr Val Leu Asp Ile Val 225 230 235

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Pro Lys Leu His Ser Val Ser Gln Leu Pro Ser Phe Ser Asp Met Glu 275 280 285

Asn Ala Thr Ile Arg Thr Pro His Leu Met Glu Phe Leu Arg Met Leu 290 295 300.

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TIC900.ST25.,txt 365

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### TIC900.ST25.txt

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Ile Gly Met Ser Ile Val Ser Glu Leu Ile Gly Met Ile Pro Gly Gly 35 40 45

Thr Ala Leu Gln Phe Val Phe Asn Gln Leu Trp Ser Arg Leu Gly Asp 50 55

Ser Gly Trp Asn Ala Phe Met Glu His Val Glu Glu Leu Ile Asp Thr 65 70 75 80

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- Pro Lys Leu His Ser Val Ser Gln Leu Pro Ser Phe Ser Asp Met Glu 275 280 285
- Asn Ala Thr Ile Arg Thr Pro His Leu Met Glu Phe Leu Arg Met Leu 290 295 300
- Thr Ile Tyr Thr Asp Trp Tyr Ser Val Gly Arg Asn Tyr Tyr Trp Gly 305 310 315
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- Phe Tyr Gly Pro Val Phe Lys Thr Leu Ser Lys Pro Thr Leu Arg Pro 355 360 365
- Leu Gln Gln Pro Ala Pro Ala Pro Pro Phe Asn Leu Arg Ser Leu Glu 370 375 380

TIC900.ST25.txt

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aat Asn	gat Asp	att Ile 115	Glu	aac Asn	tca Ser	aag Lys	gct Ala 120	caa Gln	ggt Gly	aag Lys	gta Val	gct Ala 125	aat Asn	tac Tyr	tat Tyr	384
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gga Gly	tgg Trp	tcg Ser	gag Glu 180	Gln	aaa Lys	att Ile	aaa Lys	att Ile 185	Tyr	tat Tyr	gat Asp	aga Arg	cag Gln 190	Ile	aag Lys	576
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tat Tyr 225	Asn	cgt Arg	ttc Phe	cgt Arg	aga Arg 230	Glu	atg Met	act Thr	ctt Leu	act Thr 235	: Val	tta Leu	gat Asp	ato Ile	gtt Val 240	720
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gct Ala	cag Gln	tta Leu	aca Thr 260	Arg	gaa Glu	gtt Val	tat Tyr	acg Thr 265	Asp	cct Pro	tta Lev	ctt Leu	aat Asn 270	Phe	aat Asn	816

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acg Thr 465	caa Gln	atc Ile	ccg Pro	tta Leu	gta Val 470	aaa Lys	gca Ala	tat Tyr	caa Gln	att Ile 475	gga Gly	tca Ser	ggc Gly	act Thr	act Thr 480	1440
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ggt Gly	cct Pro	gga Gly	aca Thr 500	ttt Phe	gga Gly	gat Asp	atg Met	aga Arg 505	ata Ile	aat Asn	att Ile	aat Asn	gca Ala 510	cca Pro	tta Leu	1536
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Pro 545	ГÀЗ	Thr	Ile	Asn	Asn 550	Leu	Asn	Thr		C900 Gly 555				Tyr	Arg 560	
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gat Asp	aaa Lys	att Ile 595	gaa Glu	ttt Phe	att Ile	cct Pro	gtt Val 600	gaa Glu	ctc Leu	gag Glu	gct Ala	gaa Glu 605	tat Tyr	aat Asn	ctg Leu	1824
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gaa Glu	ttg Leu	tcc Ser	gag Glu 660	aaa Lys	gtc Val	aaa Lys	cat His	gcg Ala 665	aag Lys	cga Arg	ctc Leu	agt Ser	gat Asp 670	gaa Glu	cgc Arg	2016
aat Asn	tta Leu	ctc Leu 675	caa Gln	gat Asp	tca Ser	aat Asn	ttc Phe 680	aaa Lys	gac Asp	att Ile	aat Asn	agg Arg 685	caa Gln	cca Pro	gaa Glu	2064
cgt Arg	ggg G1y	Trp	Gly	gga Gly	agt Ser	aca Thr 695	Gly	att Ile	acc Thr	atc Ile	caa Gln 700	gga Gly	Gly ggg	gat Asp	gac Asp	2112
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gaa Glu	atc Ile	tat Tyr 755	tta Leu	att Ile	cgc Arg	tac Tyr	aat Asn 760	gca Ala	aaa Lys	cat His	gaa Glu	aca Thr 765	gta Val	aat Asn	gtg Val	2304
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aag Lys 785	Cys	gga Gly	gag Glu	ccg Pro	aat Asn 790	cga Arg	tgc Cys	gcg Ala	cca Pro	cac His 795	Leu	gaa Glu	tgg Trp	aat Asn	cct Pro 800	2400
gac Asp	tta Leu	gat Asp	tgt Cys	tcg Ser 805	Cys	agg Arg	gat Asp	gga Gly	gaa Glu 810	aag Lys	tgt Cys	gcc Ala	cat His	cat His 815	Ser	2448
cat His	cat His	ttc Phe	tcc Ser	tta Leu	gac Asp	att Ile	gat Asp	gta Val	gga Gly	tgt Cys	aca Thr	gac Asp	tta Leu	aat Asn	gag Glu	2496

820

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gca aga cta Ala Arg Leu 850	Gly Asn Leu	gag ttt cte Glu Phe Le 855	c gaa gag aaa u Glu Glu Lys 860	Pro Leu Val	gga 2592 Gly
gaa gcg cta Glu Ala Leu 865	gct cgt gtg Ala Arg Val 870	aaa aga gc Lys Arg Al	g gag aaa aaa a Glu Lys Lys 875	Trp Arg Asp	aaa 2640 Lys ·880
cgt gaa aaa Arg Glu Lys	ttg gaa tgg Leu Glu Trp 885	gaa aca aa Glu Thr As	t atc gtt tat n Ile Val Tyr 890	aaa gag gca Lys Glu Ala 895	aaa 2688 Lys
gaa tct gta Glu Ser Val	gat gct tta Asp Ala Leu 900	ttt gta aa Phe Val As 90	c tct caa tat n Ser Gln Tyr 5	gat caa tta Asp Gln Leu 910	caa 2736 Gln
gcg gat acg Ala Asp Thr 915	Asn Ile Ala	atg att ca Met Ile Hi 920	t gcg gca gat s Ala Ala Asp	aaa cgt gtt Lys Arg Val 925	cat 2784 His
agc att cga Ser Ile Arg 930	gaa gct tat Glu Ala Tyr	ctg cct ga Leu Pro Gl 935	g ctg tct gtg u Leu Ser Val 940	. Ile Pro Gly	gtc 2832 Val
aat gcg gct Asn Ala Ala 945	att ttt gaa Ile Phe Glu 950	gaa tta ga Glu Leu Gl	a ggg cgt att u Gly Arg Ile 955	ttc act gca Phe Thr Ala	ttc 2880 Phe 960
tcc cta tat Ser Leu Tyr	gat gcg aga Asp Ala Arg 965	aat gtc at Asn Val Il	t aaa aat ggt Le Lys Asn Gly 970	gat ttt aat Asp Phe Asn 975	Asn
ggc tta tcc Gly Leu Ser	tgc tgg aac Cys Trp Asn 980	gtg aaa gg Val Lys Gl 98	gg cat gta gat Ly His Val Asp 35	gta gaa gaa Val Glu Glu 990	caa 2976 Gln
aac aac caa Asn Asn Glr 995	Arg Ser Val	ctt gtt g Leu Val V	gtt ccg gaa to /al Pro Glu Ti	gg gaa gca g rp Glu Ala G 1005	yaa gtg 3024 Slu Val
tca caa ga Ser Gln Gl 1010	aa gtt cgt gt Lu Val Arg Va	c tgt ccg l Cys Pro 1015	ggt cgt ggc t Gly Arg Gly 5	tat atc ctt Fyr Ile Leu 1020	cgt 3069 Arg
gtc aca go Val Thr Al 1025	cg tac aag ga la Tyr Lys Gl	g gga tat u Gly Tyr 1030	gga gaa ggt f Gly Glu Gly (	tgc gta acc Cys Val Thr 1035	att 3114 Ile
cat gag at His Glu II 1040	cc gag aac aa le Glu Asn As	t aca gac n Thr Asp 1045	gaa ctg aag t Glu Leu Lys i	ttt agc aac Phe Ser Asn 1050	tgc 3159 Cys
gta gaa ga Val Glu G 1055	ag gaa atc ta lu Glu Ile Ty	t cca aat r Pro Asn 1060	aac acg gta Asn Thr Val	acg tgt aat Thr Cys Asn 1065	gat 3204 Asp
tat act gr Tyr Thr Va 1070	ta aat caa ga al Asn Gln Gl	a gaa tac u Glu Tyr 1075	gga ggt gcg Gly Gly Ala	tac act tct Tyr Thr Ser 1080	cgt 3249 Arg
aat cga gg Asn Arg G 1085	ga tat aac ga ly Tyr Asn Gl	a gct cct u Ala Pro 1090	tcc gta cca o	gct gat tat Ala Asp Tyr 1095	gcg 3294 Ala

### TIC900.ST25.txt

tca Ser	gtc Val 1100	tat Tyr	gaa Glu	gaa Glu	aaa Lys	tcg Ser 1105	tat Tyr	aca Thr	gat Asp	gga Gly	cga Arg 1110	aga Arg	gag Glu	aat Asn	3339
cct Pro	tgt Cys 1115	gaa Glu	ttt Phe	aac Asn	aga Arg	ggg Gly 1120	Tyr	agg Arg	gat Asp	tac Tyr	acg Thr 1125	cca Pro	cta Leu	cca Pro	3384
gtt Val	ggt Gly 1130	tat Tyr	gtg Val	aca Thr	aaa Lys	gaa Glu 1135	tta Leu	gaa Glu	tac Tyr	ttc Phe	cca Pro 1140	gaa Glu	acc Thr	gat Asp	3429
aag Lys	gta Val 1145	tgg Trp	att Ile	gag Glu	att Ile	gga Gly 1150	Glu	acg Thr	gaa Glu	gga Gly	aca Thr 1155	ttt Phe	atc Ile	gtg Val	3474
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<211> 1168

<212> PRT

<213> Artificial Sequence

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Asp Ala Asn Ile Asn Met Glu Arg Phe Asp Lys Asn Asp Ala Leu Glu 20 25 30

Ile Gly Met Ser Ile Val Ser Glu Leu Ile Gly Met Ile Pro Gly Gly 35 40 45

Thr Ala Leu Gln Phe Val Phe Asn Gln Leu Trp Ser Arg Leu Gly Asp 50 55 60

Ser Gly Trp Asn Ala Phe Met Glu His Val Glu Glu Leu Ile Asp Thr 65 70 75 80

Lys Ile Glu Gly Tyr Ala Lys Asn Lys Ala Leu Ser Glu Leu Ala Gly 85 90 95

Ile Gln Arg Asn Leu Glu Thr Tyr Ile Gln Leu Arg Asn Glu Trp Glu 100 105 110

Asn Asp Ile Glu Asn Ser Lys Ala Gln Gly Lys Val Ala Asn Tyr Tyr 115 120 125

Glu	Ser	Leu	Glu	Gln	Ala	Val	Glu	Arg	Ser	Met	Pro	Gln	Phe	Ala	Val
	130					135		_			140				

- Gly Asn Phe Glu Val Pro Leu Leu Thr Val Tyr Val Gln Ala Ala Asn 145 150 155 160
- Leu His Leu Leu Leu Arg Asp Val Ser Val Tyr Gly Lys Arg Trp
  165 170 175
- Gly Trp Ser Glu Gln Lys Ile Lys Ile Tyr Tyr Asp Arg Gln Ile Lys 180 185 190
- Tyr Thr His Glu Tyr Thr Asn His Cys Val Asn Trp Tyr Asn Lys Gly 195 200 205
- Leu Glu Arg Leu Lys Asn Lys Gly Ser Ser Tyr Gln Asp Trp Tyr Asn 210 215 220
- Tyr Asn Arg Phe Arg Arg Glu Met Thr Leu Thr Val Leu Asp Ile Val 225 230 235 240
- Ala Leu Phe Pro His Tyr Asp Val Gln Thr Tyr Pro Ile Thr Thr Val 245 250 255
- Ala Gln Leu Thr Arg Glu Val Tyr Thr Asp Pro Leu Leu Asn Phe Asn 260 270
- Pro Lys Leu His Ser Val Ser Gln Leu Pro Ser Phe Ser Asp Met Glu 275 280 285
- Asn Ala Thr Ile Arg Thr Pro His Leu Met Glu Phe Leu Arg Met Leu 290 295 300
- Thr Ile Tyr Thr Asp Trp Tyr Ser Val Gly Arg Asn Tyr Tyr Trp Gly 305 310 315
- Gly His Arg Val Thr Ser Tyr His Val Gly Gly Glu Asn Ile Arg Ser 325 330 335
- Pro Leu Tyr Gly Arg Glu Ala Asn Gln Glu Val Pro Arg Asp Phe Tyr 340 350
- Phe Tyr Gly Pro Val Phe Lys Thr Leu Ser Lys Pro Thr Leu Arg Pro 355 360 365
- Leu Gln Gln Pro Ala Pro Ala Pro Pro Phe Asn Leu Arg Ser Leu Glu 370 380
- Gly Val Glu Phe His Thr Ser Thr Gly Ser Phe Met Tyr Arg Glu Arg 385 390 395 400

- Gly Ser Val Asp Ser Phe Asn Glu Leu Pro Pro Phe Asn Pro Val Gly
  405 410 415
- Leu Pro His Lys Val Tyr Ser His Arg Leu Cys His Ala Thr Phe Val 420 425 430
- Arg Lys Ser Gly Thr Pro Tyr Leu Thr Thr Gly Ala Ile Phe Ser Trp 435 440 445
- Thr His Arg Ser Ala Glu Glu Thr Asn Thr Ile Glu Ser Asn Ile Ile 450 455 460
- Thr Gln Ile Pro Leu Val Lys Ala Tyr Gln Ile Gly Ser Gly Thr Thr 465 470 475
- Val Arg Lys Gly Pro Gly Phe Thr Gly Gly Asp Ile Leu Arg Arg Thr 485 490 495
- Gly Pro Gly Thr Phe Gly Asp Met Arg Ile Asn Ile Asn Ala Pro Leu 500 505 510
- Ser Glu Arg Tyr Arg Val Arg Ile Arg Tyr Ala Ser Thr Thr Asp Leu 515 520 525
- Gln Phe Val Thr Ser Ile Asn Gly Ala Thr Ile Asn Ile Gly Asn Phe 530 535 540
- Pro Lys Thr Ile Asn Asn Leu Asn Thr Leu Gly Ser Glu Gly Tyr Arg 545 550 555
- Thr Val Ser Phe Ser Thr Pro Phe Ser Phe Ser Asn Ala Gln Ser Ile 565 570 575
- Phe Arg Leu Gly Ile Gln Ala Phe Ser Gly Val Gln Glu Val Tyr Val 580 585 590
- Asp Lys Ile Glu Phe Ile Pro Val Glu Leu Glu Ala Glu Tyr Asn Leu 595 600 605
- Glu Arg Ala Gln Lys Ala Val Asn Ala Leu Phe Thr Ser Thr Asn Gln 610 615 620
- Leu Gly Leu Lys Thr Asn Val Thr Asp Tyr His Ile Asp Gln Val Ser 625 630 635
- Asn Leu Val Thr Tyr Leu Ser Asp Glu Phe Cys Leu Asp Glu Lys Arg 645 650 655
- Glu Leu Ser Glu Lys Val Lys His Ala Lys Arg Leu Ser Asp Glu Arg 660 665 670

TIC900.ST25.txt

Asn Leu Leu Gln Asp Ser Asn Phe Lys Asp Ile Asn Arg Gln Pro Glu 675 680 685

Arg Gly Trp Gly Gly Ser Thr Gly Ile Thr Ile Gln Gly Gly Asp Asp 690 695 700

Val Phe Lys Glu Asn Tyr Val Thr Leu Ser Gly Thr Phe Asp Glu Cys 705 710 715 720

Tyr Pro Thr Tyr Leu Tyr Gln Lys Ile Asp Glu Ser Lys Leu Lys Ala 725 730 735

Phe Thr Arg Tyr Gln Leu Arg Gly Tyr Ile Glu Asp Ser Gln Asp Leu 740 745 750

Glu Ile Tyr Leu Ile Arg Tyr Asn Ala Lys His Glu Thr Val Asn Val 755 760 765

Pro Gly Thr Gly Ser Leu Trp Pro Leu Ser Ala Gln Ser Pro Ile Gly 770 775 780

Lys Cys Gly Glu Pro Asn Arg Cys Ala Pro His Leu Glu Trp Asn Pro 785 790 795 800

Asp Leu Asp Cys Ser Cys Arg Asp Gly Glu Lys Cys Ala His His Ser 805 810 815

His His Phe Ser Leu Asp Ile Asp Val Gly Cys Thr Asp Leu Asn Glu 820 825 830

Asp Leu Gly Val Trp Val Ile Phe Lys Ile Lys Thr Gln Asp Gly His 835 840 845

Ala Arg Leu Gly Asn Leu Glu Phe Leu Glu Glu Lys Pro Leu Val Gly 850 860

Glu Ala Leu Ala Arg Val Lys Arg Ala Glu Lys Lys Trp Arg Asp Lys 865 870 875 880

Arg Glu Lys Leu Glu Trp Glu Thr Asn Ile Val Tyr Lys Glu Ala Lys 885 890 895

Glu Ser Val Asp Ala Leu Phe Val Asn Ser Gln Tyr Asp Gln Leu Gln 900 905 910

Ala Asp Thr Asn Ile Ala Met Ile His Ala Ala Asp Lys Arg Val His 915 920 925

Ser Ile Arg Glu Ala Tyr Leu Pro Glu Leu Ser Val Ile Pro Gly Val 930 935 940

Asn Ala Ala Ile Phe Glu Glu Leu Glu Gly Arg Ile Phe Thr Ala Phe Page 55

TIC900.ST25.txt

945

950

960

Ser Leu Tyr Asp Ala Arg Asn Val Ile Lys Asn Gly Asp Phe Asn Asn 965 970 975

Gly Leu Ser Cys Trp Asn Val Lys Gly His Val Asp Val Glu Glu Gln 980 985 990

Asn Asn Gln Arg Ser Val Leu Val Val Pro Glu Trp Glu Ala Glu Val 995 1000 1005

Ser Gln Glu Val Arg Val Cys Pro Gly Arg Gly Tyr Ile Leu Arg 1010 1015 1020

Val Thr Ala Tyr Lys Glu Gly Tyr Gly Glu Gly Cys Val Thr Ile 1025 1030 1035

His Glu Ile Glu Asn Asn Thr Asp Glu Leu Lys Phe Ser Asn Cys 1040 1045 1050

Val Glu Glu Glu Ile Tyr Pro Asn Asn Thr Val Thr Cys Asn Asp 1055 1060 1065

Tyr Thr Val Asn Gln Glu Glu Tyr Gly Gly Ala Tyr Thr Ser Arg 1070 1075 1080

Asn Arg Gly Tyr Asn Glu Ala Pro Ser Val Pro Ala Asp Tyr Ala 1085 1090 1095

Ser Val Tyr Glu Glu Lys Ser Tyr Thr Asp Gly Arg Arg Glu Asn

Pro Cys Glu Phe Asn Arg Gly Tyr Arg Asp Tyr Thr Pro Leu Pro 1115 1120 1125

Val Gly Tyr Val Thr Lys Glu Leu Glu Tyr Phe Pro Glu Thr Asp 1130 1135 1140

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Asp Ser Val Glu Leu Leu Leu Met Glu Glu 1160 1165

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<212> DNA

<213> Artificial Sequence

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<220>															
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<222> (1).	. (3510)														
nt 7:	F Domain I nt 24-1809 (amino (amino acid 6	acid 234-603);	eid 1-233); TIC900 : CrylAc protoxin	) Domain II-III domain nt 1810-											
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aat cct gaa Asn Pro Glu	gta gaa ata t Val Glu Ile L 20	ta aat gaa gaa eu Asn Glu Glu 25	aga agt act ggc Arg Ser Thr Gly 30	aga tta 96 Arg Leu											
ccg tta gat Pro Leu Asp 35	ata tcc tta t Ile Ser Leu S	cg ctt aca cgt er Leu Thr Arg 40	ttc ctt ttg agt Phe Leu Leu Ser 45	gaa ttt 144 Glu Phe											
gtt cca ggt Val Pro Gly 50	Val Gly Val A	gcg ttt gga tta Mla Phe Gly Leu Mis	ttt gat tta ata Phe Asp Leu Ile 60	tgg ggt 192 Trp Gly											
ttt ata act Phe Ile Thr 65	cct tct gat t Pro Ser Asp T 70	gg agc tta ttt Trp Ser Leu Phe	ctt tta cag att Leu Leu Gln Ile 75	gaa caa 240 Glu Gln 80											
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aca tta cga Thr Leu Arg	ggg tta gca g Gly Leu Ala A 100	gat agc tat gaa Asp Ser Tyr Glu 105	att tat att gaa Ile Tyr Ile Glu 110	gca cta 336 Ala Leu											
aga gag tgg Arg Glu Trp 115	Glu Ala Asn I	ect aat aat gca Pro Asn Asn Ala 120	caa tta agg gaa Gln Leu Arg Glu 125	gat gtg 384 Asp Val											
cgt att cga Arg Ile Arg 130	Phe Ala Asn 1	aca gac gac gct Thr Asp Asp Ala 135	tta ata aca gca Leu Ile Thr Ala 140	ata aat 432 Ile Asn											
aat ttt aca Asn Phe Thr 145	ctt aca agt t Leu Thr Ser l 150	ttt gaa atc cct Phe Glu Ile Pro	ctt tta tcg gtc Leu Leu Ser Val 155	tat gtt 480 Tyr Val 160											
caa gcg gcg Gln Ala Ala	g aat tta cat t Asn Leu His 1 165	tta tca cta tta Leu Ser Leu Leu 170	aga gac gct gta Arg Asp Ala Val	tcg ttt 528 Ser Phe 175											
ggg cag ggt Gly Gln Gly	tgg gga ctg o Trp Gly Leu i 180	gat ata gct act Asp Ile Ala Thr 185	gtt aat aat cat Val Asn Asn His 190	tat aat 576 Tyr Asn											
aga tta ata Arg Leu Ile	a aat ctt att o Asn Leu Ile 1	cat aga tat acg His Arg Tyr Thr	aaa cat tgt ttg Lys His Cys Leu	gac aca 624 Asp Thr											

TIC9	00	S	т	2	5		txt
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		195					200		11	.0900	.512	205				
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	aga Arg															720
atc Ile	gtt Val	gct Ala	tta Leu	ttc Phe 245	ccg Pro	cac His	tat Tyr	gat Asp	gta Val 250	caa Gln	act Thr	tat Tyr	cca Pro	ata Ile 255	aca Thr	768
	gtt Val															816
	aat Asn															864
	gaa Glu 290															912
	cta Leu															960
	gga Gly															1008
aga Arg	tca Ser	cct Pro	cta Leu 340	tat Tyr	ggt Gly	aga Arg	gag Glu	gca Ala 345	aat Asn	caa Gln	gag Glu	gtt Val	cct Pro 350	aga Arg	gat Asp	1056
ttt Phe	tat Tyr	ttt Phe 355	tat Tyr	gga Gly	ccc Pro	gtt Val	ttt Phe 360	aag Lys	acg Thr	tta Leu	tca Ser	aag Lys 365	ccg Pro	act Thr	cta Leu	1104
	cca Pro 370															1152
	gag Glu															1200
	a aga 1 Arg														Pro	1248
	Gly ggg													Ala		1296
	gtt Val												Ala			1344
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	att Ile										Gln					1440
										P	age !	58				

act Thr	act Thr	gta Val	agg Arg	aaa Lys 485	gga Gly	cca Pro	gga Gly	ttc Phe	aca Thr 490	gga Gly	G <b>J</b> À aaa	gat Asp	ata Ile	ctt Leu 495	cga Arg	1488
aga Arg	aca Thr	ggt Gly	cct Pro 500	gga Gly	aca Thr	ttt Phe	gga Gly	gat Asp 505	atg Met	aga Arg	ata Ile	aat Asn	att Ile 510	aat Asn	gca Ala	1536
cca Pro	tta Leu	tct Ser 515	gaa Glu	aga Arg	tat Tyr	cgt Arg	gta Val 520	agg Arg	att Ile	cgt Arg	tat Tyr	gct Ala 525	tct Ser	acg Thr	aca Thr	1584
gat Asp	tta Leu 530	caa Gln	ttt Phe	gtc Val	acg Thr	agt Ser 535	att Ile	aat Asn	GJA āāā	gcc Ala	acc Thr 540	att Ile	aat Asn	att Ile	ggt Gly	1632
aac Asn 545	ttc Phe	cca Pro	aaa Lys	act Thr	att Ile 550	aat Asn	aat Asn	cta Leu	aat Asn	act Thr 555	tta Leu	ggt Gly	tct Ser	gag Glu	ggc Gly 560	1680
tat Tyr	aga Arg	aca Thr	gta Val	tcg Ser 565	ttt Phe	agt Ser	act Thr	cca Pro	ttt Phe 570	agt Ser	ttc Phe	tca Ser	aat Asn	gca Ala 575	caa Gln	1728
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aat Asn	ctg Leu 610	Glu	aga Arg	gcg Ala	cag Gln	aag Lys 615	Ala	gtg Val	aat Asn	gcg Ala	ctg Leu 620	Phe	acg Thr	tct Ser	aca Thr	1872
aac Asn 625	Gln	cta Lev	ggg	cta Leu	aaa Lys 630	aca Thr	aat Asn	gta Val	acg Thr	gat Asp 635	Tyr	cat His	att Ile	gat Asp	caa Gln 640	1920
gtg Val	tcc Ser	aat Asr	tta Leu	gtt Val 645	Thr	tat Tyr	tta Leu	tcg Ser	gat Asp 650	Glu	ttt Phe	tgt Cys	cto Lev	gat Asp 655	gaa Glu	1968
aag Lys	g cga G Arg	gaa Glu	ttg Leu 660	Ser	gag Glu	aaa Lys	gto Val	aaa Lys 665	His	gcg Ala	ı aaçı Lys	g cga s Arg	cto Leu 670	ı sei	gat Asp	2016
gaa Glu	a cgo a Arg	aat Asr 675	. Leu	cto Lev	caa Gln	gat Asp	tca Ser 680	: Asr	tto Phe	aaa Lys	a gad s Asp	2 att 5 Ile 685	ASI	ago Aro	g caa g Gln	2064
cca Pro	a gaa o Glu 690	ı Arç	g Gly	y tgo y Trp	ggc Gly	gga Gly 695	/ Sei	aca Thi	c Gl7	g att / Ile	acc Thi	c TT6	c caa e Gli	a gga a Gly	a ggg	2112
gat Ası 70!	Ası	gta Va	a ttt L Phe	aaa E Lys	gaa Glu 710	ı Ası	tac n Ty	gto Val	c aca L Thi	a cta Leu 715	ı Se:	a ggt r Gly	t ace	c tti	t gat e Asp 720	2160
gaq Glu	g tgo ı Cys	tai Ty:	t cca r Pro	a aca Thi	с Туз	ttq Lei	g tai	t caa r Gli	a aaa n Lys 730	s Ile	c gat e As	t gaa p Glu	a tca u Sea	a aaar r Ly: 73	a tta s Leu 5	2208
aaa Ly:	a gco s Ala	e tt	t acc e Thi 740	r Ar	t tat	caa Gl	a tta n Le	a aga u Are 74	g Gl	y tai	t ate	c gaa e Gl	a ga u As 75	р зе	t caa r Gln	2256

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gac Asp	tta Leu	gaa Glu 755	atc Ile	tat Tyr	tta Leu	att Ile	cgc Arg 760	tac Tyr	aat	gca	aaa	cat	gaa	aca Thr	gta Val	2304
aat Asn	gtg Val 770	cca Pro	ggt Gly	acg Thr	ggt Gly	tcc Ser 775	tta Leu	tgg Trp	ccg Pro	ctt Leu	tca Ser 780	gcc Ala	caa Gln	agt Ser	cca Pro	2352
atc Ile 785	gga Gly	aag Lys	tgt Cys	gga Gly	gag Glu 790	ccg Pro	aat Asn	cga Arg	tgc Cys	gcg Ala 795	cca Pro	cac His	ctt Leu	gaa Glu	tgg Trp 800	2400
aat Asn	cct Pro	gac Asp	tta Leu	gat Asp 805	tgt Cys	tcg Ser	tgt Cys	agg Arg	gat Asp 810	gga Gly	gaa Glu	aag Lys	tgt Cys	gcc Ala 815	cat His	2448
cat His	tcg Ser	cat His	cat His 820	ttc Phe	tcc Ser	tta Leu	gac Asp	att Ile 825	gat Asp	gta Val	gga Gly	tgt Cys	aca Thr 830	gac Asp	tta Leu	2496
aat Asn	gag Glu	gac Asp 835	cta Leu	ggt Gly	gta Val	tgg Trp	gtg Val 840	atc Ile	ttt Phe	aag Lys	att Ile	aag Lys 845	acg Thr	caa Gln	gat Asp	2544
GJÀ âââ	cac His 850	gca Ala	aga Arg	cta Leu	Gly ggg	aat Asn 855	cta Leu	gag Glu	ttt Phe	ctc Leu	gaa Glu 860	Glu	aaa Lys	cca Pro	tta Leu	2592
gta Val 865	gga Gly	gaa Glu	gcg Ala	cta Leu	gct Ala 870	cgt Arg	gtg Val	aaa Lys	aga Arg	gcg Ala 875	gag Glu	aaa Lys	aaa Lys	tgg Trp	aga Arg 880	2640
gac Asp	aaa Lys	cgt Arg	gaa Glu	aaa Lys 885	ttg Leu	gaa Glu	tgg Trp	gaa Glu	aca Thr 890	Asn	atc Ile	gtt Val	tat Tyr	aaa Lys 895	gag Glu	2688
gca Ala	aaa Lys	gaa Glu	tct Ser 900	gta Val	gat Asp	gct Ala	tta Leu	ttt Phe 905	gta Val	aac Asn	tct Ser	caa Gln	tat Tyr 910	Asp	caa Gln	2736
tta Leu	caa Gln	gcg Ala 915	Asp	acg Thr	aat Asn	att Ile	gcc Ala 920	Met	att Ile	cat His	gcg Ala	gca Ala 925	Asp	aaa Lys	cgt Arg	2784
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ggt Gly 945	gtc Val	aat Asn	gcg Ala	gct Ala	att Ile 950	ttt Phe	gaa Glu	gaa Glu	tta Leu	gaa Glu 955	Gly	g cgt 7 Arg	att Ile	ttc Phe	act Thr 960	2880
gca Ala	ttc Phe	tcc Ser	cta Leu	tat Tyr 965	Asp	gcg Ala	aga Arg	aat Asn	gtc Val 970	. Ile	aaa Lys	aat Asn	ggt Gly	gat Asp 975	ttt Phe	2928
aat Asn	aat Asn	ggc	tta Leu 980	Ser	tgc Cys	tgg Trp	aac Asn	gtg Val 985	Lys	ggg Gly	cat His	gta Val	gat Asp 990	o Val	gaa Glu	2976
gaa Glu	caa Gln	aac Asn 995	Asn	caa Gln	cgt Arg	tcg Ser	gtc Val 100	. Le	t gt u Va	t gt il Va	t co l Pr	:o G1	ia t .u I )05	gg g	gaa gca Slu Ala	3024
_	gtg Val 101	Se	a ca er Gl	a ga n Gl	a gt u Va	l Ar	t g g V 15	rtc t al C	gt c ys E	cg g	ly F	gt Arg L020	ggc Gly	tat Tyr	atc Ile	3069
ctt	cgt	gt	c ac	a gc	g ta	c aa	g g	gag g	rga t		ga g age		ggt	tgc	gta	3114

Leu	Arg 1025	Val	Thr	Ala	Tyr	Lys 1030	Glu	Gly	TIC9 Tyr	00.s Gly	T25.t Glu 1035	xt Gly	Cys	Val		
acc Thr	att Ile 1040	cat His	gag Glu	atc Ile	gag Glu	aac Asn 1045	aat Asn	aca Thr	gac Asp	gaa Glu	ctg Leu 1050	aag Lys	ttt Phe	agc Ser	31	159
aac Asn	tgc Cys 1055	gta Val	gaa Glu	gag Glu	gaa Glu	atc Ile 1060	tat Tyr	cca Pro	aat Asn	aac Asn	acg Thr 1065	gta Val	acg Thr	tgt Cys	32	204
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tct Ser	cgt Arg 1085	aat Asn	cga Arg	gga Gly	tat Tyr	aac Asn 1090	Glu	gct Ala	cct Pro	tcc Ser	gta Val 1095	cca Pro	gct Ala	gat Asp	32	294
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	aat Asn 1115					aac Asn 1120	Arg								3:	384
cta Leu	cca Pro 1130	gtt Val	ggt Gly	tat Tyr	gtg Val	aca Thr 1135	Lys	gaa Glu	tta Leu	gaa Glu	tac Tyr 1140	Phe	cca Pro	gaa Glu	3	429
acc Thr	gat Asp 1145	Lys	gta Val	tgg Trp	att Ile	gag Glu 1150	att Ile	gga Gly	gaa Glu	acg Thr	gaa Glu 1155	Gly	aca Thr	ttt Phe	3	474
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<210> 26

<211> 1170

<212> PRT

<213> Artificial Sequence

<220>

<223> tic110 CDS consisting of CDS for Domain I of CrylF linked in fram e to CDS for Domain II-III of TIC900 linked in frame to CDS for C rylAc protoxin

<400> 26

Met Glu Asn Asn Ile Gln Asn Gln Cys Val Pro Tyr Asn Cys Leu Asn 1 5 10 15

Asn Pro Glu Val Glu Ile Leu Asn Glu Glu Arg Ser Thr Gly Arg Leu 20 25 30

Pro Leu Asp Ile Ser Leu Ser Leu Thr Arg Phe Leu Leu Ser Glu Phe 35 40 45

#### TIC900.ST25.txt

Val Pro Gly Val Gly Val Ala Phe Gly Leu Phe Asp Leu Ile Trp Gly 50 55 60

Phe Ile Thr Pro Ser Asp Trp Ser Leu Phe Leu Leu Gln Ile Glu Gln 65 70 75 80

Leu Ile Glu Gln Arg Ile Glu Thr Leu Glu Arg Asn Arg Ala Ile Thr 85 90 95

Thr Leu Arg Gly Leu Ala Asp Ser Tyr Glu Ile Tyr Ile Glu Ala Leu 100 105 110

Arg Glu Trp Glu Ala Asn Pro Asn Asn Ala Gln Leu Arg Glu Asp Val 115 120 125

Arg Ile Arg Phe Ala Asn Thr Asp Asp Ala Leu Ile Thr Ala Ile Asn 130 135 140

Asn Phe Thr Leu Thr Ser Phe Glu Ile Pro Leu Leu Ser Val Tyr Val 145 150 155 160

Gln Ala Ala Asn Leu His Leu Ser Leu Leu Arg Asp Ala Val Ser Phe 165 170 175

Gly Gln Gly Trp Gly Leu Asp Ile Ala Thr Val Asn Asn His Tyr Asn 180 185 190

Arg Leu Ile Asn Leu Ile His Arg Tyr Thr Lys His Cys Leu Asp Thr 195 200 205

Tyr Asn Gln Gly Leu Glu Asn Leu Arg Gly Thr Asn Thr Arg Gln Trp 210 215 220

Ala Arg Phe Asn Gln Phe Arg Arg Asp Leu Thr Leu Thr Val Leu Asp 225 230 235 240

Ile Val Ala Leu Phe Pro His Tyr Asp Val Gln Thr Tyr Pro Ile Thr 245 250 255

Thr Val Ala Gln Leu Thr Arg Glu Val Tyr Thr Asp Pro Leu Leu Asn 260 265 270

Phe Asn Pro Lys Leu His Ser Val Ser Gln Leu Pro Ser Phe Ser Asp 275 280 285

Met Glu Asn Ala Thr Ile Arg Thr Pro His Leu Met Glu Phe Leu Arg 290 295 300

Met Leu Thr Ile Tyr Thr Asp Trp Tyr Ser Val Gly Arg Asn Tyr Tyr 305 310 315 320

TIC900.ST25.txt

Trp Gly Gly His Arg Val Thr Ser Tyr His Val Gly Gly Glu Asn Ile 325 330 335

Arg Ser Pro Leu Tyr Gly Arg Glu Ala Asn Gln Glu Val Pro Arg Asp 340 345 350

Phe Tyr Phe Tyr Gly Pro Val Phe Lys Thr Leu Ser Lys Pro Thr Leu 355 360 365

Arg Pro Leu Gln Gln Pro Ala Pro Ala Pro Pro Phe Asn Leu Arg Ser 370 375 380

Leu Glu Gly Val Glu Phe His Thr Ser Thr Gly Ser Phe Met Tyr Arg 385 390 395 400

Glu Arg Gly Ser Val Asp Ser Phe Asn Glu Leu Pro Pro Phe Asn Pro 405 410 415

Val Gly Leu Pro His Lys Val Tyr Ser His Arg Leu Cys His Ala Thr 420 425 430

Phe Val Arg Lys Ser Gly Thr Pro Tyr Leu Thr Thr Gly Ala Ile Phe
435
440
445

Ser Trp Thr His Arg Ser Ala Glu Glu Thr Asn Thr Ile Glu Ser Asn 450 455 460

Ile Ile Thr Gln Ile Pro Leu Val Lys Ala Tyr Gln Ile Gly Ser Gly 465 470 475 480

Thr Thr Val Arg Lys Gly Pro Gly Phe Thr Gly Gly Asp Ile Leu Arg 485 490 495

Arg Thr Gly Pro Gly Thr Phe Gly Asp Met Arg Ile Asn Ile Asn Ala 500 505 510

Pro Leu Ser Glu Arg Tyr Arg Val Arg Ile Arg Tyr Ala Ser Thr Thr 515 525

Asp Leu Gln Phe Val Thr Ser Ile Asn Gly Ala Thr Ile Asn Ile Gly 530 535 540

Asn Phe Pro Lys Thr Ile Asn Asn Leu Asn Thr Leu Gly Ser Glu Gly 545 550 555

Tyr Arg Thr Val Ser Phe Ser Thr Pro Phe Ser Phe Ser Asn Ala Gln 565 570 575

Ser Ile Phe Arg Leu Gly Ile Gln Ala Phe Ser Gly Val Gln Glu Val 580 585 590

Tyr Val Asp Lys Ile Glu Phe Ile Pro Val Glu Leu Glu Ala Glu Tyr
Page 63

TIC900.ST25.txt 605

595

Asn Leu Glu Arg Ala Gln Lys Ala Val Asn Ala Leu Phe Thr Ser Thr 610 620

600

Asn Gln Leu Gly Leu Lys Thr Asn Val Thr Asp Tyr His Ile Asp Gln 625 630 635

Val Ser Asn Leu Val Thr Tyr Leu Ser Asp Glu Phe Cys Leu Asp Glu 645 650 655

Lys Arg Glu Leu Ser Glu Lys Val Lys His Ala Lys Arg Leu Ser Asp 660 665 670

Glu Arg Asn Leu Leu Gln Asp Ser Asn Phe Lys Asp Ile Asn Arg Gln 675 680 685

Pro Glu Arg Gly Trp Gly Gly Ser Thr Gly Ile Thr Ile Gln Gly Gly 690 695 700

Asp Asp Val Phe Lys Glu Asn Tyr Val Thr Leu Ser Gly Thr Phe Asp 705 710 715 720

Glu Cys Tyr Pro Thr Tyr Leu Tyr Gln Lys Ile Asp Glu Ser Lys Leu 725 730 735

Lys Ala Phe Thr Arg Tyr Gln Leu Arg Gly Tyr Ile Glu Asp Ser Gln 740 745 750

Asp Leu Glu Ile Tyr Leu Ile Arg Tyr Asn Ala Lys His Glu Thr Val 755 760 765

Asn Val Pro Gly Thr Gly Ser Leu Trp Pro Leu Ser Ala Gln Ser Pro 770 780

Ile Gly Lys Cys Gly Glu Pro Asn Arg Cys Ala Pro His Leu Glu Trp 785 790 795 800

Asn Pro Asp Leu Asp Cys Ser Cys Arg Asp Gly Glu Lys Cys Ala His 805 810 815

His Ser His His Phe Ser Leu Asp Ile Asp Val Gly Cys Thr Asp Leu 820 825 830

Asn Glu Asp Leu Gly Val Trp Val Ile Phe Lys Ile Lys Thr Gln Asp 835 840 845

Gly His Ala Arg Leu Gly Asn Leu Glu Phe Leu Glu Glu Lys Pro Leu 850 855 860

Val Gly Glu Ala Leu Ala Arg Val Lys Arg Ala Glu Lys Lys Trp Arg 865 870 875

- Asp Lys Arg Glu Lys Leu Glu Trp Glu Thr Asn Ile Val Tyr Lys Glu 885 890 895
- Ala Lys Glu Ser Val Asp Ala Leu Phe Val Asn Ser Gln Tyr Asp Gln 900 905 910
- Leu Gln Ala Asp Thr Asn Ile Ala Met Ile His Ala Ala Asp Lys Arg 915 920 925
- Val His Ser Ile Arg Glu Ala Tyr Leu Pro Glu Leu Ser Val Ile Pro 930 935 940
- Gly Val Asn Ala Ala Ile Phe Glu Glu Leu Glu Gly Arg Ile Phe Thr 945 950 955 960
- Ala Phe Ser Leu Tyr Asp Ala Arg Asn Val Ile Lys Asn Gly Asp Phe 965 970 975
- Asn Asn Gly Leu Ser Cys Trp Asn Val Lys Gly His Val Asp Val Glu 980 985 990
- Glu Gln Asn Asn Gln Arg Ser Val Leu Val Val Pro Glu Trp Glu Ala 995 1000 1005
- Glu Val Ser Gln Glu Val Arg Val Cys Pro Gly Arg Gly Tyr Ile 1010 1020
- Leu Arg Val Thr Ala Tyr Lys Glu Gly Tyr Gly Glu Gly Cys Val 1025 1030 1035
- Thr Ile His Glu Ile Glu Asn Asn Thr Asp Glu Leu Lys Phe Ser 1040 1045 1050
- Asn Cys Val Glu Glu Glu Ile Tyr Pro Asn Asn Thr Val Thr Cys 1055 1060 1065
- Asn Asp Tyr Thr Val Asn Gln Glu Glu Tyr Gly Gly Ala Tyr Thr 1070 1075 1080
- Ser Arg Asn Arg Gly Tyr Asn Glu Ala Pro Ser Val Pro Ala Asp 1085 1090 1095
- Tyr Ala Ser Val Tyr Glu Glu Lys Ser Tyr Thr Asp Gly Arg Arg 1100 1105 1110
- Glu Asn Pro Cys Glu Phe Asn Arg Gly Tyr Arg Asp Tyr Thr Pro 1115 1120 1125
- Leu Pro Val Gly Tyr Val Thr Lys Glu Leu Glu Tyr Phe Pro Glu 1130 1140

TIC900.ST25.txt

Thr Asp Lys Val Trp Ile Glu Ile Gly Glu Thr Glu Gly Thr Phe
1145

Tle Val Asp Ser Val Glu Leu Leu Met Glu Glu
1165

Leu Leu Met Glu Glu
1170

<210> 27 <211> 3516

<213> Artificial Sequence

DNA

<220>

<212>

<223> TIC111 CDS consisting of CDS for Cry1Ac domain I linked in frame to CDS for TIC900 domain II-III linked in frame to CDS for Cry1Ac protoxin domain

<220>

<221> CDS

<222> (1)..(3516)

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tct ttt aga gag tgg gaa gca gat cct act aat cca gca tta aga gaa

Ser Phe Arg Glu Trp Glu Ala Asp Pro Thr Asn Pro Ala Leu Arg Glu

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384

TIC900.ST25.txt
115 120 125

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cgc Arg	tgg Trp 210	tac Tyr	aat Asn	acg Thr	gga Gly	tta Leu 215	gag Glu	cgt Arg	gta Val	tgg Trp	gga Gly 220	ccg Pro	gat Asp	tct Ser	aga Arg	672
gat Asp 225	tgg Trp	ata Ile	aga Arg	tat Tyr	aat Asn 230	caa Gln	ttt Phe	aga Arg	aga Arg	gat Asp 235	cta Leu	acg Thr	ctt Leu	act Thr	gtt Val 240	720
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ctt Leu	aat Asn	ttt Phe 275	Asn	cct Pro	aaa Lys	tta Leu	cat His 280	Ser	gtg Val	tct Ser	caa Gln	tta Leu 285	Pro	agt Ser	ttt Phe	864
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aga Arg	gat Asp	ttt Phe 355	Tyr	ttt Phe	tat Tyr	gga Gly	Pro 360	val	ttt Phe	aag Lys	aco Thi	tta Lei 365	ı Sei	a aag E Lys	g ccg s Pro	1104
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cgt Arg 385	, Sei	tta Lev	gag Glu	gga Gly	gta Val 390	. Glu	tto Phe	c cac His	act Thi	tct Ser 395	Thi	a ggt	agt / Sei	ttt Phe	atg Met 400	1200

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												aat Asn				1392
												tat Tyr				1440
												gga Gly				1488
ctt Leu	cga Arg	aga Arg	aca Thr 500	ggt Gly	cct Pro	gga Gly	aca Thr	ttt Phe 505	gga Gly	gat Asp	atg Met	aga Arg	ata Ile 510	aat Asn	att Ile	1536
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												gcc Ala				1632
												act Thr				1680
												agt Ser				1728
												tct Ser				1776
Ξ.					_		Ξ.			_		gaa Glu 605	_		gct ' Ala	1824
												gcg Ala				1872
												gat Asp				1920
												gaa Glu				1968
gat Asp	gaa Glu	aag Lys	cga Arg 660	gaa Glu	ttg Leu	tcc Ser	gag Glu	aaa Lys 665	gtc Val	aaa Lys	cat His	gcg Ala	aag Lys 670	cga Arg	ctc Leu	2016

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agt Ser	gat Asp	gaa Glu 675	cgc Arg	aat Asn	tta Leu	ctc Leu	caa Gln 680	gat Asp	tca Ser	aat Asn	ttc Phe	aaa Lys 685	gac Asp	att Ile	aat Asn	2064
agg Arg	caa Gln 690	cca Pro	gaa Glu	cgt Arg	Gly ggg	tgg Trp 695	ggc Gly	gga Gly	agt Ser	aca Thr	ggg Gly 700	att Ile	acc Thr	atc Ile	caa Gln	2112
gga Gly 705	ggg ggg	gat Asp	gac Asp	gta Val	ttt Phe 710	aaa Lys	gaa Glu	aat Asn	tac Tyr	gtc Val 715	aca Thr	cta Leu	tca Ser	ggt Gly	acc Thr 720	2160
ttt Phe	gat Asp	gag Glu	tgc Cys	tat Tyr 725	cca Pro	aca Thr	tat Tyr	ttg Leu	tat Tyr 730	caa Gln	aaa Lys	atc Ile	gat Asp	gaa Glu 735	tca Ser	2208
aaa Lys	tta Leu	aaa Lys	gcc Ala 740	ttt Phe	acc Thr	cgt Arg	tat Tyr	caa Gln 745	tta Leu	aga Arg	Gly	tat Tyr	atc Ile 750	gaa Glu	gat Asp	2256
agt Ser	caa Gln	gac Asp 755	tta Leu	gaa Glu	atc Ile	tat Tyr	tta Leu 760	att Ile	cgc Arg	tac Tyr	aat Asn	gca Ala 765	aaa Lys	cat His	gaa Glu	2304
aca Thr	gta Val 770	aat Asn	gtg Val	cca Pro	ggt Gly	acg Thr 775	ggt Gly	tcc Ser	tta Leu	tgg Trp	ccg Pro 780	ctt Leu	tca Ser	gcc Ala	caa Gln	2352
agt Ser 785	cca Pro	atc Ile	gga Gly	aag Lys	tgt Cys 790	gga Gly	gag Glu	ccg Pro	aat Asn	cga Arg 795	tgc Cys	gcg Ala	cca Pro	cac His	ctt Leu 800	2400
gaa Glu	tgg Trp	aat Asn	cct Pro	gac Asp 805	tta Leu	gat Asp	tgt Cys	tcg Ser	tgt Cys 810	Arg	gat Asp	gga Gly	gaa Glu	aag Lys 815	tgt Cys	2448
gcc Ala	cat His	cat His	tcg Ser 820	cat His	cat His	ttc Phe	tcc Ser	tta Leu 825	gac Asp	att Ile	gat Asp	gta Val	gga Gly 830	Cys	aca Thr	2496
gac Asp	tta Leu	aat Asn 835	gag Glu	gac Asp	cta Leu	ggt Gly	gta Val 840	$\mathtt{Trp}$	gtg Val	atc Ile	ttt Phe	aag Lys 845	Ile	aag Lys	acg Thr	2544
caa Gln	gat Asp 850	Gly	cac His	gca Ala	aga Arg	cta Leu 855	Gly	aat Asn	cta Leu	gag Glu	ttt Phe 860	Leu	gaa Glu	gag Glu	aaa Lys	2592
cca Pro 865	Leu	gta Val	gga Gly	gaa Glu	gcg Ala 870	Leu	gct Ala	cgt Arg	gtg Val	aaa Lys 875	Arg	gcg Ala	gag Glu	aaa Lys	aaa Lys 880	2640
tgg Trp	aga Arg	gac Asp	aaa Lys	cgt Arg 885	Glu	aaa Lys	ttg Leu	gaa Glu	tgg Trp 890	Glu	aca Thr	aat Asn	atc Ile	gtt Val 895	tat Tyr	2688
aaa Lys	gag Glu	gca Ala	aaa Lys 900	Glu	tct Ser	gta Val	gat Asp	gct Ala 905	Leu	ttt Phe	gta Val	aac Asn	tct Ser 910	Gln	tat Tyr	2736
gat Asp	caa Gln	tta Leu 915	Gln	gcg Ala	gat Asp	acg Thr	aat Asn 920	Ile	gcc	atg Met	att Ile	cat His 925	Ala	gca Ala	gat Asp	2784
aaa Lys	cgt Arg 930	Val	cat His	agc Ser	att Ile	cga Arg 935	Glu	gct Ala	tat Tyr	ctg Leu	cct Pro	Glu	ctg Leu	tct Sex	gtg Val	2832
att	ccg	ggt	gto	aat	gcg	gct	att	ttt	gaa				ggg	r cgt	att	2880
										P	age	<b>U J</b>				

Ile 945	Pro (	Sly '	Val .		Ala <i>I</i> 950	Ala Il	le Pi			u Le	T25.t eu Glu		, Arg	7 Ile 960	
			Phe .						rg As		c att			Gly	2928
		Asn A						p As			aa ggg ys Gly		. Val		2976
	Glu (					in A					al Va			gaa tgg Glu Trp	3024
gaa Glu	gca Ala 1010	gaa Glu	gtg Val	tca Ser	caa Gln	gaa Glu 1015	gtt Val	cgt Arg	gtc Val	tgt Cys	ccg Pro 1020	ggt Gly	cgt Arg	ggc Gly	3069
	atc Ile 1025	ctt Leu	cgt Arg	gtc Val	aca Thr	gcg Ala 1030	tac Tyr	aag Lys	gag Glu	gga Gly	tat Tyr 1035	gga Gly	gaa Glu	ggt Gly	3114
	gta Val 1040										gac Asp 1050				3159
	agc Ser 1055										aat Asn 1065				3204
_	_		-			_			_	-	tac Tyr 1080				3249
	act Thr 1085										cct Pro 1095		gta Val		3294
	gat Asp 1100					tat Tyr 1105	-	-		_	tat Tyr 1110		gat Asp		3339
											tat Tyr 1125				3384
acg Thr	cca Pro 1130	cta Leu									tta Leu 1140				3429
	gaa Glu 1145										gaa Glu 1155				3474
	ttt Phe 1160	atc Ile	gtg Val	gac Asp	agc Ser	gtg Val 1165	gaa Glu	tta Leu	ctc Leu	ctt Leu	atg Met 1170	gag Glu	gaa Glu		3516

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<211> 1172

<212> PRT

<213> Artificial Sequence

### TIC900.ST25.txt

<220>

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<400> 28

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Ser Asn Pro Glu Val Glu Val Leu Gly Glu Glu Arg Ile Glu Thr Gly 20 25 30

Tyr Thr Pro Ile Asp Ile Ser Leu Ser Leu Thr Gln Phe Leu Leu Ser 35 40 45

Glu Phe Val Pro Gly Ala Gly Phe Val Leu Gly Leu Val Asp Ile Ile 50 55 60

Trp Gly Ile Phe Gly Pro Ser Gln Trp Asp Ala Phe Leu Val Gln Ile 65 70 75 80

Glu Gln Leu Ile Asn Gln Arg Ile Glu Glu Phe Ala Arg Asn Gln Ala 85 90 95

Ile Ser Arg Leu Glu Gly Leu Ser Asn Leu Tyr Gln Ile Tyr Ala Glu 100 105 110

Ser Phe Arg Glu Trp Glu Ala Asp Pro Thr Asn Pro Ala Leu Arg Glu 115 120 125

Glu Met Arg Ile Gln Phe Asn Asp Met Asn Ser Ala Leu Thr Thr Ala 130 135 140

Ile Pro Leu Phe Ala Val Gln Asn Tyr Gln Val Pro Leu Leu Ser Val 145 150 155 160

Tyr Val Gln Ala Ala Asn Leu His Leu Ser Val Leu Arg Asp Val Ser 165 170 175

Val Phe Gly Gln Arg Trp Gly Phe Asp Ala Ala Thr Ile Asn Ser Arg 180 185 190

Tyr Asn Asp Leu Thr Arg Leu Ile Gly Asn Tyr Thr Asp His Ala Val 195 200 205

Arg Trp Tyr Asn Thr Gly Leu Glu Arg Val Trp Gly Pro Asp Ser Arg 210 215 220

Asp Trp Ile Arg Tyr Asn Gln Phe Arg Arg Asp Leu Thr Leu Thr Val 225 230 235 240

TIC900.ST25.txt

Leu Asp Ile Val Ala Leu Phe Pro His Tyr Asp Val Gln Thr Tyr Pro 245 250 255

Ile Thr Thr Val Ala Gln Leu Thr Arg Glu Val Tyr Thr Asp Pro Leu 260 265 270

Leu Asn Phe Asn Pro Lys Leu His Ser Val Ser Gln Leu Pro Ser Phe 275 280 285

Ser Asp Met Glu Asn Ala Thr Ile Arg Thr Pro His Leu Met Glu Phe 290 295 300

Leu Arg Met Leu Thr Ile Tyr Thr Asp Trp Tyr Ser Val Gly Arg Asn 305 310 320

Tyr Tyr Trp Gly Gly His Arg Val Thr Ser Tyr His Val Gly Glu 325 330 335

Asn Ile Arg Ser Pro Leu Tyr Gly Arg Glu Ala Asn Gln Glu Val Pro 340 345 350

Arg Asp Phe Tyr Phe Tyr Gly Pro Val Phe Lys Thr Leu Ser Lys Pro 355 360 365

Thr Leu Arg Pro Leu Gln Gln Pro Ala Pro Ala Pro Pro Phe Asn Leu 370 375 380

Arg Ser Leu Glu Gly Val Glu Phe His Thr Ser Thr Gly Ser Phe Met 385 390 395 400

Tyr Arg Glu Arg Gly Ser Val Asp Ser Phe Asn Glu Leu Pro Pro Phe
405 410 415

Asn Pro Val Gly Leu Pro His Lys Val Tyr Ser His Arg Leu Cys His 420 425 430

Ala Thr Phe Val Arg Lys Ser Gly Thr Pro Tyr Leu Thr Thr Gly Ala

Ile Phe Ser Trp Thr His Arg Ser Ala Glu Glu Thr Asn Thr Ile Glu
450 455 460

Ser Asn Ile Ile Thr Gln Ile Pro Leu Val Lys Ala Tyr Gln Ile Gly

Ser Gly Thr Thr Val Arg Lys Gly Pro Gly Phe Thr Gly Gly Asp Ile 485 490 495

Leu Arg Arg Thr Gly Pro Gly Thr Phe Gly Asp Met Arg Ile Asn Ile 500 505 510

Asn Ala Pro Leu Ser Glu Arg Tyr Arg Val Arg Ile Arg Tyr Ala Ser Page 72

### TIC900.ST25.txt 525

Thr Thr Asp Leu Gln Phe Val Thr Ser Ile Asn Gly Ala Thr Ile Asn 530 540

520

515

Ile Gly Asn Phe Pro Lys Thr Ile Asn Asn Leu Asn Thr Leu Gly Ser

Glu Gly Tyr Arg Thr Val Ser Phe Ser Thr Pro Phe Ser Phe Ser Asn 565 570 575

Ala Gln Ser Ile Phe Arg Leu Gly Ile Gln Ala Phe Ser Gly Val Gln 580 585 590

Glu Val Tyr Val Asp Lys Ile Glu Phe Ile Pro Val Glu Leu Glu Ala 595 600 605

Glu Tyr Asn Leu Glu Arg Ala Gln Lys Ala Val Asn Ala Leu Phe Thr 610 615 620

Ser Thr Asn Gln Leu Gly Leu Lys Thr Asn Val Thr Asp Tyr His Ile 625 630 635

Asp Gln Val Ser Asn Leu Val Thr Tyr Leu Ser Asp Glu Phe Cys Leu 645 650 655

Asp Glu Lys Arg Glu Leu Ser Glu Lys Val Lys His Ala Lys Arg Leu
660 665 670

Ser Asp Glu Arg Asn Leu Leu Gln Asp Ser Asn Phe Lys Asp Ile Asn 675 680 685

Arg Gln Pro Glu Arg Gly Trp Gly Gly Ser Thr Gly Ile Thr Ile Gln 690 695 700

Gly Gly Asp Asp Val Phe Lys Glu Asn Tyr Val Thr Leu Ser Gly Thr 705 710 715 720

Phe Asp Glu Cys Tyr Pro Thr Tyr Leu Tyr Gln Lys Ile Asp Glu Ser 725 730 735

Lys Leu Lys Ala Phe Thr Arg Tyr Gln Leu Arg Gly Tyr Ile Glu Asp 740 745 750

Ser Gln Asp Leu Glu Ile Tyr Leu Ile Arg Tyr Asn Ala Lys His Glu 755 760 765

Thr Val Asn Val Pro Gly Thr Gly Ser Leu Trp Pro Leu Ser Ala Gln 770 775 780

Ser Pro Ile Gly Lys Cys Gly Glu Pro Asn Arg Cys Ala Pro His Leu 785 790 795 800

# Page 73

#### TIC900.ST25.txt

Glu Trp Asn Pro Asp Leu Asp Cys Ser Cys Arg Asp Gly Glu Lys Cys 805 810 815

Ala His His Ser His His Phe Ser Leu Asp Ile Asp Val Gly Cys Thr 820 825 830

Asp Leu Asn Glu Asp Leu Gly Val Trp Val Ile Phe Lys Ile Lys Thr 835 840 845

Gln Asp Gly His Ala Arg Leu Gly Asn Leu Glu Phe Leu Glu Glu Lys 850 855 860

Pro Leu Val Gly Glu Ala Leu Ala Arg Val Lys Arg Ala Glu Lys Lys 865 870 875 886

Trp Arg Asp Lys Arg Glu Lys Leu Glu Trp Glu Thr Asn Ile Val Tyr 885 890 895

Lys Glu Ala Lys Glu Ser Val Asp Ala Leu Phe Val Asn Ser Gln Tyr 900 905 910

Asp Gln Leu Gln Ala Asp Thr Asn Ile Ala Met Ile His Ala Asp 915 . 920 925

Lys Arg Val His Ser Ile Arg Glu Ala Tyr Leu Pro Glu Leu Ser Val 930 935 940

Ile Pro Gly Val Asn Ala Ala Ile Phe Glu Glu Leu Glu Gly Arg Ile 945 950 955 960

Phe Thr Ala Phe Ser Leu Tyr Asp Ala Arg Asn Val Ile Lys Asn Gly 965 970 975

Asp Phe Asn Asn Gly Leu Ser Cys Trp Asn Val Lys Gly His Val Asp 980 985 990

Val Glu Glu Gln Asn Asn Gln Arg Ser Val Leu Val Val Pro Glu Trp 995 1000 1005

Glu Ala Glu Val Ser Gln Glu Val Arg Val Cys Pro Gly Arg Gly 1010 1015 1020

Tyr Ile Leu Arg Val Thr Ala Tyr Lys Glu Gly Tyr Gly Glu Gly 1025 1030 1035

Cys Val Thr Ile His Glu Ile Glu Asn Asn Thr Asp Glu Leu Lys 1040 1050

Phe Ser Asn Cys Val Glu Glu Glu Ile Tyr Pro Asn Asn Thr Val 1055 1060 1065

TIC900.ST25.txt

Thr Cys Asn Asp Tyr Thr Val 1075 Asn Gln Glu Glu Tyr Gly Gly Ala 1080

Tyr Thr Ser Arg Asn Arg Gly Tyr Asn Glu Ala Pro 1095 Ser Val Pro 1085

Ala Asp Tyr Ala Ser Val Tyr Glu Glu Lys Ser Tyr Thr Asp Gly 1100

Arg Arg Glu Asn Pro Cys Glu Phe Asn Arg Gly Tyr Arg Asp Tyr 1115

Thr Pro Leu Pro Val Gly Tyr Val Thr Lys Glu Leu Glu Tyr Phe 1130

Thr Asp Lys Val Trp Ile Glu Ile Gly Glu Thr Glu Gly Gly Tyr Asp Gly 1145

Thr Phe Ile Val Asp Ser Val Glu Leu Leu Met Glu Glu 1160 1165 1170

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<211> 7585

<212> DNA

<213> Bacillus thuringiensis

<220>

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<223> TIC434 CDS

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# TIC900.ST25.txt

		gag Glu						513
		tct Ser						561
		ttt Phe 55						609
		atg Met						657
		aaa Lys						705
		aca Thr						753
		aag Lys						801
		gtt Val 135						849
		ctt Leu						897
		aga Arg						945
		att Ile						993
		aat Asn						1041
 -		aaa Lys 215			-			1089
		gaa Glu						1137
		gat Asp						1185
		gtt Val						1233
		tct Ser						1281

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								atg Met	gaa	ttt	tta	aga	atg			1329
								gga Gly								1377
								gga Gly 330								1425
								gag Glu								1473
								tca Ser								1521
								ttt Phe								1569
								agt Ser								1617
								ccg Pro 410								1665
								tta Leu								1713
								aca Thr								1761
								aca Thr								1809
								caa Gln								1857
agg Arg	aaa Lys	gga Gly	cca Pro 485	gga Gly	ttc Phe	aca Thr	gga Gly	ggg Gly 490	gat Asp	ata Ile	ctt Leu	cga Arg	aga Arg 495	aca Thr	ggt Gly	1905
								ata Ile								1953
								tat Tyr								2001
								act Thr								2049
								tta Leu								2097
gta	tct	ttt	agt	acg	cca	ttt	agt	ttt	tca	gat	gca	caa	agt	ata	ttt	2145

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TIC900.ST25.txt	
Val Ser Phe Ser Thr Pro Phe Ser Phe Ser Asp Ala Gln Ser Ile Phe 565 570 575	
aga tta ggt ata caa gct ttt tct gga gtt caa gaa gtt tat gtg gat Arg Leu Gly Ile Gln Ala Phe Ser Gly Val Gln Glu Val Tyr Val Asp 580 585 590	2193
aaa att gaa ttt atc cct ttt gaa gta gga ttc aat aat aca atc Lys Ile Glu Phe Ile Pro Phe Glu Val Gly Phe Asn Asn Thr Ile 595 600 605	2238
tagaaagagc acagaagatt taaaatcaga tagaatgtat taacatatta atcaagcatc	2298
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aaatatttaa gtgagataca aaatctcctt aaatttaggg caataaaatc tatttaatta	2838

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# TIC900.ST25.txt

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aggtggt						7585

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<213> Bacillus thuringiensis

<400> 30

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### TIC900.ST25.txt

Asp Ala Asn Ile Asn Met Glu Arg Phe Asp Lys Asn Asp Ala Leu Glu,

Ile Gly Met Ser Ile Val Ser Glu Leu Cly Met Ile Pro Gly Gly
35 40 45

Lys Ala Leu Gln Phe Val Phe Asp Gln Leu Trp Ser Arg Leu Gly Asp 50 55 60

Ser Gly Trp Ser Ala Phe Met Glu His Val Glu Glu Leu Ile Asp Thr 65 70 75 80

Lys Ile Glu Gly Tyr Ala Lys Asn Lys Ala Leu Ser Glu Leu Ala Gly 85 90 95

Ile Gln Arg Asn Leu Glu Thr Tyr Ile Gln Leu Arg Asn Glu Trp Glu
100 105 110

Asn Asp Ile Glu Asn Ser Lys Ala Gln Val Lys Val Ala Asn Tyr Tyr 115 120 125

Glu Ser Leu Glu Gln Ala Val Glu Arg Ser Met Pro Gln Phe Ala Val 130 135 140

Gly Asn Phe Glu Val Pro Leu Leu Thr Val Tyr Val Gln Ala Ala Asn 145 150 155

Leu His Ile Leu Leu Leu Arg Asp Val Leu Ile Tyr Gly Lys Arg Trp
165 170 175

Gly Trp Ser Glu Gln Lys Ile Lys Ile Tyr Tyr Asp Arg Gln Ile Lys 180 185 190

Tyr Thr His Glu Tyr Thr Asn His Cys Val Asn Trp Tyr Asn Lys Gly
195 200 205

Leu Glu Arg Leu Lys Asn Lys Gly Ser Ser Tyr Gln Asp Trp Tyr Asn 210 215 220

Tyr Asn Arg Phe Arg Arg Glu Met Thr Leu Thr Val Leu Asp Ile Val 225 230 235 240

Ala Leu Phe Pro His Tyr Asp Val Gln Thr Tyr Pro Ile Thr Thr Val 245 250 255

Ala Gln Leu Thr Arg Glu Val Tyr Thr Asp Pro Leu Leu Asn Phe Asn 260 265 270

Pro Lys Leu His Ser Val Ser Gln Leu Pro Ser Phe Ser Asp Met Glu 275 280 285

TIC900.ST25.txt

Asn Ala Thr Ile Arg Thr Pro His Leu Met Glu Phe Leu Arg Met Leu 290 290 300

Thr Ile Tyr Thr Asp Trp Tyr Ser Val Gly Arg Asn Tyr Tyr Trp Gly 305 310 315

Gly His Arg Val Thr Ser Tyr His Val Gly Gly Glu Asn Ile Arg Ser 325 330 335

Pro Leu Tyr Gly Arg Glu Ala Asn Gln Glu Val Pro Arg Asp Phe Tyr 340 345 350

Phe Tyr Gly Pro Val Phe Lys Thr Leu Ser Lys Pro Thr Leu Arg Pro 355 360 365

Leu Gln Gln Pro Ala Pro Ala Pro Pro Phe Asn Leu Arg Ser Leu Glu 370 375 380

Gly Val Glu Phe His Thr Pro Thr Gly Ser Phe Leu Tyr Arg Glu Arg 385 390 395 400

Gly Ser Val Asp Ser Phe Asn Glu Leu Pro Pro Phe Asn Leu Val Gly
405 410 415

Leu Pro His Lys Val Tyr Ser His Arg Leu Cys His Ala Thr Phe Val 420 425 430

Arg Lys Ser Gly Thr Pro Tyr Leu Thr Thr Gly Ala Ile Phe Ser Trp 435 440 445

Thr His Arg Ser Ala Glu Glu Thr Asn Thr Ile Glu Ser Asn Ile Ile 450 455 460

Thr Gln Ile Pro Leu Val Lys Ala Tyr Gln Ile Gly Ser Gly Thr Thr 465 470 475 480

Val Arg Lys Gly Pro Gly Phe Thr Gly Gly Asp Ile Leu Arg Arg Thr 485 490 495

Gly Pro Gly Thr Phe Gly Asp Met Arg Ile Asn Ile Asn Ala Pro Leu 500 505 510

Ser Gln Arg Tyr Arg Val Arg Ile Arg Tyr Ala Ser Thr Thr Asp Leu 515 525

Gln Phe Phe Thr Ser Ile Asn Gly Thr Thr Ile Asn Ile Gly Asn Phe 530 535 540

Pro Lys Thr Ile Asn Asn Val Asn Pro Leu Ser Ser Glu Ser Tyr Arg 545 550 555

Thr Val Ser Phe Ser Thr Pro Phe Ser Phe Ser Asp Ala Gln Ser Ile Page 82 565 TIC900.ST25.txt 575

Phe Arg Leu Gly Ile Gln Ala Phe Ser Gly Val Gln Glu Val Tyr Val 580 585 590

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ds to Cryl protoxin

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att g	t Ser							144
aaa g Lys A 5								192
tct go Ser G 65								240
aaa a Lys I								288
ata ca Ile G								336
aat ga Asn As	e Glu							384
gaa aq Glu Se 1:								432

									T)	C900	) . ST2	25.tz	ct.			
ggg Gly 145	aat Asn	ttt Phe	gaa Glu	gta Val	cca Pro 150	ctt Leu	tta Leu	act Thr	gtt	tat	ata	caa	act	gct Ala	aat Asn 160	480
ctt Leu	cat His	ata Ile	tta Leu	tta Leu 165	tta Leu	aga Arg	gat Asp	gtt Val	cta Leu 170	att Ile	tat Tyr	gga Gly	aag Lys	cgt Arg 175	tgg Trp	. 528
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ctt Leu	gag Glu 210	aga Arg	tta Leu	aaa Lys	aat Asn	aaa Lys 215	ggt Gly	tct Ser	tct Ser	tat Tyr	caa Gln 220	gat Asp	tgg Trp	tac Tyr	aat Asn	672
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gct Ala	tta Leu	ttc Phe	ccg Pro	cac His 245	tat Tyr	gat Asp	gta Val	caa Gln	act Thr 250	tat Tyr	cca Pro	ata Ile	aca Thr	acc Thr 255	gtt Val	768
gct Ala	cag Gln	cta Leu	aca Thr 260	agg Arg	gaa Glu	gtt Val	tat Tyr	acg Thr 265	gat Asp	cct Pro	tta Leu	ctt Leu	aat Asn 270	ttt Phe	aat Asn	816
								tta Leu								864
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aca Thr 305	att Ile	tat Tyr	aca Thr	gat Asp	tgg Trp 310	tat Tyr	agt Ser	gtg Val	gga Gly	aga Arg 315	aac Asn	tat Tyr	tat Tyr	tgg Trp	gga Gly 320	960
gga Gly	cat His	cgc Arg	gtg Val	acg Thr 325	tct Ser	tac Tyr	cat His	gta Val	gga Gly 330	gga Gly	gag Glu	aat Asn	ata Ile	aga Arg 335	tca Ser	1008
cct Pro	cta Leu	tat Tyr	ggt Gly 340	aga Arg	gag Glu	gca Ala	aat Asn	caa Gln 345	gag Glu	gtt Val	cct Pro	aga Arg	gat Asp 350	ttt Phe	tat Tyr	1056
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gga Gly	tcg Ser	gta Val	gat Asp	tct Ser 405	ttt Phe	aat Asn	gag Glu	tta Leu	ccg Pro 410	cct Pro	ttt Phe	aat Asn	cta Leu	gtt Val 415	ggg Gly	1248
tta	cct	cat	aag	gta	tac	agt	cac	cgt	tta	tgt	cat	gca	acg	ttt	gtt	1296

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Leu	Pro	His	Lys 420	Val	Tyr	Ser	His	Arg 425	T) Leu	Cys Cys	O.ST? His	25.tz Ala	thr 430	Phe	Val	
cgt Arg	aaa Lys	tct Ser 435	Glà	acc Thr	cct Pro	tat Tyr	tta Leu 440	aca Thr	aca Thr	ggt Gly	gcc Ala	atc Ile 445	ttt Phe	tct Ser	tgg Trp	1344
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gta Val	agg Arg	aaa Lys	gga Gly	cca Pro 485	gga Gly	ttc Phe	aca Thr	gga Gly	ggg Gly 490	gat Asp	ata Ile	ctt Leu	cga Arg	aga Arg 495	aca Thr	1488
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tct Ser	caa Gln	aga Arg 515	tat Tyr	cgt Arg	gta Val	agg Arg	att Ile 520	cgt Arg	tat Tyr	gct Ala	tct Ser	acg Thr 525	aca Thr	gat Asp	tta Leu	1584
caa Gln	ttt Phe 530	ttc Phe	acg Thr	agc Ser	att Ile	aat Asn 535	gga Gly	acc Thr	act Thr	att .Ile	aat Asn 540	atc Ile	Gly	aat Asn	ttc Phe	1632
ccc Pro 545	aaa Lys	act Thr	att Ile	áat Asn	aat Asn 550	gtg Val	aat Asn	cct Pro	tta Leu	agt Ser 555	tct Ser	gag Glu	agc Ser	tat Tyr	aga Arg 560	1680
aca Thr	gta Val	tct Ser	ttt Phe	agt Ser 565	acg Thr	cca Pro	ttt Phe	agt Ser	ttt Phe 570	tca Ser	gat Asp	gca Ala	caa Gln	agt Ser 575	ata Ile	1728
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gat Asp	aaa Lys	att Ile 595	gaa Glu	ttt Phe	atc Ile	cct Pro	ttt Phe 600	gaa Glu	gta Val	gga Gly	ttc Phe	aat Asn 605	aat Asn	aca Thr	atc Ile	1824
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ctg Leu 625	ttt Phe	acg Thr	tct Ser	aca Thr	aac Asn 630	caa Gln	cta Leu	Gly ggg	cta Leu	aaa Lys 635	aca Thr	aat Asn	gta Val	acg Thr	gat Asp 640	1920
tat Tyr	cat His	att Ile	gat Asp	caa Gln 645	gtg Val	tcc Ser	aat Asn	tta Leu	gtt Val 650	acg Thr	tat Tyr	tta Leu	tcg Ser	gat Asp 655	gaa Glu	1968
									tcc Ser							2016
									ctc Leu							2064
gac Asp	att Ile	aat Asn	agg Arg	caa Gln	cca Pro	gaa Glu	cgt Arg	GJ À āāā	tgg Trp	ggc Gly	gga Gly	agt Ser	aca Thr	GJ À āāā	att Ile	2112

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TIC900.ST25.txt
690 695 700

	690					093					700					
acc Thr 705	atc Ile	caa Gln	gga Gly	GJA Gaa	gat Asp 710	gac Asp	gta Val	ttt Phe	aaa Lys	gaa Glu 715	aat Asn	tac Tyr	gtc Val	aca Thr	cta Leu 720	2160
tca Ser	ggt Gly	acc Thr	ttt Phe	gat Asp 725	gag Glu	tgc Cys	tat Tyr	cca Pro	aca Thr 730	tat Tyr	ttg Leu	tat Tyr	caa Gln	aaa Lys 735	atc Ile	2208
gat Asp	gaa Glu	tca Ser	aaa Lys 740	tta Leu	aaa Lys	gcc Ala	ttt Phe	acc Thr 745	cgt Arg	tat Tyr ,	caa Gln	tta Leu	aga Arg 750	G1A Gaa	tat Tyr	2256
							gaa Glu 760									2304
aaa Lys	cat His 770	gaa Glu	aca Thr	gta Val	aat Asn	gtg Val 775	cca Pro	ggt Gly	acg Thr	ggt Gly	tcc Ser 780	tta Leu	tgg Trp	ccg Pro	ctt Leu	2352
							aag Lys									2400
							gac Asp									2448
gaa Glu	aag Lys	tgt Cys	gcc Ala 820	cat His	cat His	tcg Ser	cat His	cat His 825	ttc Phe	tcc Ser	tta Leu	gac Asp	att Ile 830	gat Asp	gta Val	<b>2496</b>
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							gaa Glu									2640
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							gaa Glu									2736
							gcg Ala 920									2784
							agc Ser					Tyr				2832
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# TIC900.ST25.txt

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cat His	gta Val	gat Asp 995	gta Val	gaa Glu	gaa Glu	GIn A	ac sn 000	aac Asn	caa Gln	cgt Arg	Ser V	tc al 005	ctt Leu	gtt gtt Val Val	3024	
ccg Pro	gaa Glu 101	Trr	gaa Glu	gca Ala	gaa Glu	gtg Val 1015	Ser	caa Gln	gaa Glu	gtt Val	cgt Arg 1020	gtc Val	tgt Cys	ccg Pro	3069	
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GТĀ	Gly 1085	Ala	Tyr	Thr	Ser	Arg 1090	Asn	Arg	Gly	Tyr	aac Asn 1095	Glu	gct Ala		3294	
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gaa Glu	tac Tyr 1145	Phe	cca Pro	gaa Glu	acc Thr	gat Asp 1150	aag Lys	gta Val	tgg Trp	att Ile	gag Glu 1155		gga Gly		3474	
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### TIC900.ST25.txt

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Asp Ala Asn Ile Asn Met Glu Arg Phe Asp Lys Asn Asp Ala Leu Glu 20 25 30

Ile Gly Met Ser Ile Val Ser Glu Leu Gly Met Ile Pro Gly Gly
35 40 45

Lys Ala Leu Gln Phe Val Phe Asp Gln Leu Trp Ser Arg Leu Gly Asp 50 55 60

Ser Gly Trp Ser Ala Phe Met Glu His Val Glu Glu Leu Ile Asp Thr 65 70 75 80

Lys Ile Glu Gly Tyr Ala Lys Asn Lys Ala Leu Ser Glu Leu Ala Gly
85 90 95

Ile Gln Arg Asn Leu Glu Thr Tyr Ile Gln Leu Arg Asn Glu Trp Glu 100 105 110

Asn Asp Ile Glu Asn Ser Lys Ala Gln Val Lys Val Ala Asn Tyr Tyr 115 120 125

Glu Ser Leu Glu Gln Ala Val Glu Arg Ser Met Pro Gln Phe Ala Val 130 135 140

Gly Asn Phe Glu Val Pro Leu Leu Thr Val Tyr Val Gln Ala Ala Asn 145 150 155 160

Leu His Ile Leu Leu Leu Arg Asp Val Leu Ile Tyr Gly Lys Arg Trp
165 170 175

Gly Trp Ser Glu Gln Lys Ile Lys Ile Tyr Tyr Asp Arg Gln Ile Lys 180 185 190

Tyr Thr His Glu Tyr Thr Asn His Cys Val Asn Trp Tyr Asn Lys Gly 195 200 205

Leu Glu Arg Leu Lys Asn Lys Gly Ser Ser Tyr Gln Asp Trp Tyr Asn 210 215 220

Tyr Asn Arg Phe Arg Arg Glu Met Thr Leu Thr Val Leu Asp Ile Val 225 230 235 240

Ala Leu Phe Pro His Tyr Asp Val Gln Thr Tyr Pro Ile Thr Thr Val 245 250 255

Ala Gln Leu Thr Arg Glu Val Tyr Thr Asp Pro Leu Leu Asn Phe Asn 260 265 270

### TIC900.ST25.txt

Pro Lys Leu His Ser Val Ser Gln Leu Pro Ser Phe Ser Asp Met Glu 275 280 285

Asn Ala Thr Ile Arg Thr Pro His Leu Met Glu Phe Leu Arg Met Leu 290 295 300

Thr Ile Tyr Thr Asp Trp Tyr Ser Val Gly Arg Asn Tyr Tyr Trp Gly 305 310 315 320

Gly His Arg Val Thr Ser Tyr His Val Gly Gly Glu Asn Ile Arg Ser 325 330 335

Pro Leu Tyr Gly Arg Glu Ala Asn Gln Glu Val Pro Arg Asp Phe Tyr 340 345 350

Phe Tyr Gly Pro Val Phe Lys Thr Leu Ser Lys Pro Thr Leu Arg Pro 355 360 365

Leu Gln Gln Pro Ala Pro Ala Pro Pro Phe Asn Leu Arg Ser Leu Glu 370 375 380

Gly Val Glu Phe His Thr Pro Thr Gly Ser Phe Leu Tyr Arg Glu Arg 385 390 395 400

Gly Ser Val Asp Ser Phe Asn Glu Leu Pro Pro Phe Asn Leu Val Gly 405 410 415

Leu Pro His Lys Val Tyr Ser His Arg Leu Cys His Ala Thr Phe Val 420 425 430

Arg Lys Ser Gly Thr Pro Tyr Leu Thr Thr Gly Ala Ile Phe Ser Trp 435 440 445

Thr His Arg Ser Ala Glu Glu Thr Asn Thr Ile Glu Ser Asn Ile Ile 450 455 460

Thr Gln Ile Pro Leu Val Lys Ala Tyr Gln Ile Gly Ser Gly Thr Thr 465 470 475 480

Val Arg Lys Gly Pro Gly Phe Thr Gly Gly Asp Ile Leu Arg Arg Thr 485 490 495

Gly Pro Gly Thr Phe Gly Asp Met Arg Ile Asn Ile Asn Ala Pro Leu 500 505 510

Ser Gln Arg Tyr Arg Val Arg Ile Arg Tyr Ala Ser Thr Thr Asp Leu 515 520 525

Gln Phe Phe Thr Ser Ile Asn Gly Thr Thr Ile Asn Ile Gly Asn Phe 530 535 540

Pro Lys Thr Ile Asn Asn Val Asn Pro Leu Ser Ser Glu Ser Tyr Arg Page 89

560

	TIC900.ST25.txt
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545

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565 570 575

Phe Arg Leu Gly Ile Gln Ala Phe Ser Gly Val Gln Glu Val Tyr Val 580 585 590

Asp Lys Ile Glu Phe Ile Pro Phe Glu Val Gly Phe Asn Asn Thr Ile 595 600 605

Leu Glu Ala Glu Tyr Asn Leu Glu Arg Ala Gln Lys Ala Val Asn Ala 610 615 620

Leu Phe Thr Ser Thr Asn Gln Leu Gly Leu Lys Thr Asn Val Thr Asp 625 630 635 640

Tyr His Ile Asp Gln Val Ser Asn Leu Val Thr Tyr Leu Ser Asp Glu 645 650 655

Phe Cys Leu Asp Glu Lys Arg Glu Leu Ser Glu Lys Val Lys His Ala 660 665 670

Lys Arg Leu Ser Asp Glu Arg Asn Leu Leu Gln Asp Ser Asn Phe Lys 675 680 685

Asp Ile Asn Arg Gln Pro Glu Arg Gly Trp Gly Gly Ser Thr Gly Ile 690 695 700

Thr Ile Gln Gly Gly Asp Asp Val Phe Lys Glu Asn Tyr Val Thr Leu 705 710 715 720

Ser Gly Thr Phe Asp Glu Cys Tyr Pro Thr Tyr Leu Tyr Gln Lys Ile 725 730 735

Asp Glu Ser Lys Leu Lys Ala Phe Thr Arg Tyr Gln Leu Arg Gly Tyr 740 745 750

Ile Glu Asp Ser Gln Asp Leu Glu Ile Tyr Leu Ile Arg Tyr Asn Ala 755 760 765

Lys His Glu Thr Val Asn Val Pro Gly Thr Gly Ser Leu Trp Pro Leu 770 780

Ser Ala Gln Ser Pro Ile Gly Lys Cys Gly Glu Pro Asn Arg Cys Ala 785 790 795 800

Pro His Leu Glu Trp Asn Pro Asp Leu Asp Cys Ser Cys Arg Asp Gly 805 810 815

Glu Lys Cys Ala His His Ser His His Phe Ser Leu Asp Ile Asp Val 820 825 830

## TIC900.ST25.txt

Gly Cys Thr Asp Leu Asn Glu Asp Leu Gly Val Trp Val Ile Phe Lys 835 840 845

Ile Lys Thr Gln Asp Gly His Ala Arg Leu Gly Asn Leu Glu Phe Leu 850 855 860

Glu Glu Lys Pro Leu Val Gly Glu Ala Leu Ala Arg Val Lys Arg Ala 865 870 875

Glu Lys Lys Trp Arg Asp Lys Arg Glu Lys Leu Glu Trp Glu Thr Asn 885 890 895

Ile Val Tyr Lys Glu Ala Lys Glu Ser Val Asp Ala Leu Phe Val Asn 900 905 910

Ser Gln Tyr Asp Gln Leu Gln Ala Asp Thr Asn Ile Ala Met Ile His 915 920 925

Ala Ala Asp Lys Arg Val His Ser Ile Arg Glu Ala Tyr Leu Pro Glu 930 935 940

Leu Ser Val Ile Pro Gly Val Asn Ala Ala Ile Phe Glu Glu Leu Glu 945 950 955 960

Gly Arg Ile Phe Thr Ala Phe Ser Leu Tyr Asp Ala Arg Asn Val Ile 965 970 975

Lys Asn Gly Asp Phe Asn Asn Gly Leu Ser Cys Trp Asn Val Lys Gly 980 985 990

His Val Asp Val Glu Glu Gln Asn Asn Gln Arg Ser Val Leu Val Val 995 1000 1005

Pro Glu Trp Glu Ala Glu Val Ser Gln Glu Val Arg Val Cys Pro 1010 1015 1020

Gly Arg Gly Tyr Ile Leu Arg Val Thr Ala Tyr Lys Glu Gly Tyr 1025 1030 1035

Gly Glu Gly Cys Val Thr Ile His Glu Ile Glu Asn Asn Thr Asp 1040 1045 1050

Glu Leu Lys Phe Ser Asn Cys Val Glu Glu Glu Ile Tyr Pro Asn 1055 1060 1065

Asn Thr Val Thr Cys Asn Asp Tyr Thr Val Asn Gln Glu Glu Tyr 1070 1075 1080

Gly Gly Ala Tyr Thr Ser Arg Asn Arg Gly Tyr Asn Glu Ala Pro 1085 1090 1095

## TIC900.ST25.txt

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Thr Asp Gly Arg Arg Glu Asn Pro Cys Glu Phe Asn Arg Gly Tyr 1115 1120 1125

Arg Asp Tyr Thr Pro Leu Pro Val Gly Tyr Val Thr Lys Glu Leu 1130 1140

Glu Tyr Phe Pro Glu Thr Asp Lys Val Trp Ile Glu Ile Gly Glu 1145 1150 1155

Glu Glu 1175